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ABSTRACT

Developed especially for high school health occupations education programs in Missouri, this guide uses U.S. Occupational Safety and Health Administration (OSHA) rules as a base for guidelines for student participation in health care. The document informs administrators and teachers about special circumstances that must be considered in the education and supervision of students. It is intended to be used to inform parents and students of potential risks and as a resource in establishing school policy for clinical practice. The first part of the document establishes the protocol for infection control, including information on establishing school policy, informing students and parents, educating students, evaluating students in clinical sites, and keeping records. The largest part of the document contains the following 13 appendixes: (1) sample letter to administrators, directors, and counselors; (2) sample immunization record and record for mastery of student outcomes; (3) sample Hepatitis B vaccination declination form; (4) sample letter to students and parents for meeting on infection control; (5) sample agenda for meeting on infection control; (6) sample record of participants for the information meeting on infection control; (7) sample permission form for Hepatitis B vaccination; (8) OSHA final rule on exposure to bloodborne pathogens; (9) background information on microbiology, body substance precautions, precautions for airborne diseases, health care workers' responsibilities in developing safe work habits, and information on occupational exposure and infections; (10) body substance precautions alert sign; (11) infection control achievement test with answer key; (12) checklist for maintenance of student records and forms; and (13) resource guide listing three print resources and seven agencies and associations. Contains 23 references. (KC)

ED 379 456

A Protocol Document For Health Occupations Education Programs in Missouri

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MEMO

To: Health Occupations Educators

From: Jane Scott, State Supervisor Health Occupations Education

RE: Infection Control Protocol for Student Clinical Experiences

During the 1993-1994 school year an advisory committee met under the guidance of the Instructional Materials Laboratory (IML) to develop an *Infection Control Protocol for Student Clinical Experiences: A Protocol Document for Health Occupations Education Programs in Missouri.* This project was initiated because many health educators directed questions to the Missouri Department of Elementary and Secondary Education regarding the Hepatitis B Immunization, the 1991 Occupational Safety and Health Administration's (OSHA) ruling that requires information dissemination and immunization for employees working in high risk areas, and the concern for students' safety in clinical sites. Literature has encouraged having students immunized against Hepatitis B for over 10 years; however, most schools did not become actively involved in the issue until the OSHA ruling and subsequent loss of clinical sites for student rotations.

Missouri Health Occupations Educators have been teaching current principles of infection control as a significant part of the curricula for years. The minimum education for students recommended in the protocol document should have little or no effect on current curricula because I believe our schools have, in most cases, included more than the minimum in their curricula. Documentation of mastery of this information prior to entering the clinical area may or may not have been occurring.

Most programs with adult or postsecondary students have already dealt with the problem of the Hepatitis B immunization by including it as a required expense of the program. This problem has not been so easily resolved for instructors of high school programs. Immunization recommendations are included in the protocol document.

The advisory committee chose to address not just AIDS and Hepatitis B but to develop the protocol document to address infection control as a whole. I hope this document will assist your school in developing policies regarding immunizations and student safety in clinical experiences. The protocol document contains recommendations, not mandates. It is my hope that schools who have not already taken steps to resolve this issue will use this document to encourage administration to take action.

Infection Control Protocol for Student Clinical Experiences

A Protocol Document for Health Occupations Education Programs in Missouri

Produced by the
Instructional Materials Laboratory
University of Missouri
Columbia, MO 65211

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Infection Control Protocol for Student Clinical Experiences

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Foreword

Occupational hazards are a part of many jobs, and the risks are significant for health care workers and health occupations students - especially when dealing with blood and other potentially infectious body substances. On December 6, 1991, the Occupational Safety and Health Administration (OSHA) issued a final rule for exposure to bloodborne pathogens to protect workers from infections. The standard follows guidelines issued by the Centers for Disease Control and Prevention (CDC) and covers all employees who might come in contact with blood or infectious materials on the job. The regulation fails, however, to specifically include students participating in clinical experiences in health-care settings.

Concern for the health and safety of health occupations students, combined with the fact that most health care settings utilized for clinical experience are bound by the OSHA standard, makes it imperative that guidelines for student participation in health care be established. This document informs administrators and teachers about special circumstances that must be considered in the education and supervision of students. This manual should be used to inform parents and students of potential risks and as a resource in establishing school policy for clinical practice.

Jane Scott, Supervisor
Health Occupation Education
Department of Elementary
and Secondary Education
Jefferson City, Missouri

Acknowledgements

A sincere thanks is extended to Diane Dunn-Sluyter, who while in the position of Health Occupations Education Supervisor, Missouri Department of Elementary and Secondary Education (MDESE), had the foresight to see the need for the development of a Missouri protocol document on infection control.

Exposure Control for Blood and Other Potentially Infectious Material: A Protocol Document for Health Occupations Education Programs in West Virginia was used as a model protocol in the initial phase of development. We would like to thank Lauretta Cole, Supervisor Health Occupations Education, Division of Technical and Adult Education Services, West Virginia for allowing us to use their document as a model.

An advisory committee consisting of technical experts, secondary health occupations education instructors, postsecondary health occupations education instructors, administrator, and department of education staff were consulted throughout the development of this document. The Missouri Protocol Document advisory committee included: Linda Bickell, Lincoln University; Paula Bullock, University of Missouri-Columbia Hospital; Caryl Collier, Bureau of Communicable Disease Control; Rhonda Gamble, Mineral Area Junior College; LuAnn Hammersland, State Fair Community College; Eddie Hedrick, University of Missouri-Columbia Hospital; Carles Houseworth, Lex LaRay Technical School; Sharon LeFors, LeClede Area Vocational Technical School; Marcile Lewis, Warrensburg Area Vocational School; Delbert Lund, Department of Elementary and Secondary Education; and Jane Scott, Department of Elementary and Secondary Education.

Special appreciation is expressed to Eddie Hedrick who provided much to the background information and to Paula Bullock and Caryl Collier who provided technical information. Thank you, Mark VanZandt, School Law, Missouri Department of Elementary and Secondary Education for providing guidance.

The Instructional Materials Laboratory (IML) was contracted to develop the document . Expression is expressed to the following staff members for their assistance: Harley Schlichting, Director; Phyllis Miller, Assistant Director; Dan Stapleton, Assistant Director; Veronica Feilner, Editor Jan Trimble, Word Processor, and Angela Bach, Editorial Assistant.

Jane Scott, Supervisor
Health Occupation Education
Department of Elementary
and Secondary Education

Protocol for Infection Control

• Establish School Policy

Inform Administrators, Directors, and Counselors - A sample letter is included as Appendix A.

Establish Immunization Policy - As administrators, educators, and health care professionals, we are concerned about the health, safety, and well-being of students enrolled in health occupations education (HOE) programs. We are, therefore, recommending that an immunization record be maintained for all HOE students reflecting both documented proof of immunity and/or immunizations administered. At each immunization encounter, the record should be updated and the HOE student encouraged to maintain the record as appropriate. A sample immunization record is in Appendix B.

The following immunizations (or proof of immunity) are **required** for all health occupations education students:

- Purified Protein Derivative (PPD) test for Tuberculosis (TB)
  NOTE: Tine Test is not acceptable.
- Diphtheria, Pertussis, Tetanus (DPT)
- Measles, Mumps, Rubella (MMR)
- Oral Polio

The following immunizations (or proof of immunity) are **recommended** for all health occupations education students:

- Influenza
- Hepatitis B Vaccine (HepB)

HOE students who decline vaccination must complete a declination form. An approved declination form appears in Appendix C. This form must become a part of the student's permanent record.

Establish School Exposure Control Plan - In the cooperative agreement with the clinical site, identify who is responsible for injury or exposure involving students. If students are responsible for injuries, inform students and parents. If students are not personally covered by health insurance, recommend that they obtain coverage.

When the clinical instructor is notified that an exposure involving a student has occurred:

A. Inform staff supervisor of incident and follow facility procedure for treatment. Treatment should include:
   - Evaluation by physician or advanced practice nurse
   - Post-exposure prophylaxis
   - Counseling
   - Follow-up medical evaluation and treatment

B. Inform parents.

C. Inform school administrator and follow school accident procedure.

NOTE: Refer to the "Procedure for Occupational Exposure to Blood and Other Potentially Infectious Materials" section in Appendix I for more information.

• Inform Students and Parents

The media has not been remiss in reporting about Hepatitis B and AIDS. Consequently, the average citizen has some knowledge of these bloodborne diseases. However, administrators and Health Occupations Education (HOE) teachers have a responsibility to make certain that accurate information is made available to potential students and parents/legal guardians of secondary students. It is essential that students and parents understand HOE students' potential for exposure to bloodborne pathogens and other potentially infectious body substances and the preventive measures which can eliminate or minimize exposure.

Adult students, i.e. practical nursing, may be informed on an individual basis as they are accepted into the program. Secondary students and their parents/legal guardians are required to participate in an informational meeting prior to the beginning of school or during the first week of class. This meeting will be approximately one hour in length. A sample explanatory letter to students and parents/guardians appears in Appendix D. If necessary, several meetings should be scheduled at various times to facilitate maximum participation.

The major purpose of the meeting is to inform students and parents/guardians about health care workers' risks in contracting infectious diseases and the preventive measures that can be instituted to reduce the risks. Informed parents are more likely to have their children properly immunized. A recommended agenda appears in Appendix E. At the completion of the meeting, participants should sign the "Record of Participants for the Informational Meeting on Infection Control in Health Care Settings," Appendix F, indicating that they have been informed of the risks of HOE students' exposure to blood and other potentially infectious body substances.

If adult students or parents/legal guardians do not wish to follow through with the recommended immunizations for HBV, a declination statement must be signed prior to the beginning of clinical experience. A sample vaccination declination statement appears in Appendix C. A sample immunization record appears in Appendix B. If the instructor is going to administer the Hepatitis B vaccination, a Permission Form for Hepatitis B Vaccination must be signed by student and/or parent/guardian. A copy of the U. S. Department of Health and Human Services "Important Information About Hepatitis B, Hepatitis B Vaccine, and Hepatitis B Immune Globulin" is provided in Appendix G. If this form is used, keep a copy of it in the student's permanent file. The back of the form contains the signature of the person receiving the vaccine.

Advisory committees (school and program) should be invited to participate in the planning and implementation of the informational meeting. Community health care professionals such as physicians, pharmacists and county health department staff should be encouraged to attend and to be available to assist in answering questions regarding Hepatitis B vaccinations and the program being implemented. Members of the county school system should also be encouraged to participate. The group could include, but should not be limited to, county/district superintendent of schools, vocational administrators, counselors, county lawyer, and board of education members.

Reference materials such as fact sheets and brochures published by federal agencies and pharmaceutical groups should be distributed to enhance understanding and awareness. The use of appropriate videos and/or films should also be considered.

• Educate Students

NOTE: Information for this section is provided in Appendix H: OSHA Bloodborne Pathogens Standard; Appendix I: Background Information; Appendix J: Body Substance Precautions Stop Sign Alert and Body Substance Precautions Sample Sign; and Appendix K: Infection Control Achievement Test and Answer Key. A record keeping form for student outcomes is included in Appendix B. Additional Resources are listed in Appendix M.

I. Clinical Applications of Microbiology

   A. Chain of infection

   B. Environmental conditions that promote growth of microorganisms

   C. Common infectious diseases (Use a current manual on infectious diseases. See resources in Appendix M.)

II. Body Substance Precautions (BSP)

A. Definition

B. Differentiate between BSP, Universal Precautions, and Disease-Specific Isolation techniques.

C. Work practice controls

1. Handwashing - when and how

2. Personal Protective Equipment

a. Gloves
b. Gowns
c. Goggles or face shields
d. Masks
e. Resuscitation devices

3. Sharps disposal techniques

4. Handling of soiled linen

D. Engineering controls

1. Biohazard symbol (Illustrated in Appendix I, page 55)

2. Stop Sign Alert (Illustrated in Appendix K)

3. Equipment provided by the health care facility

III. Exposure

A. Define exposure

B. Steps to follow once an exposure incident occurs

• Evaluate Students in Clinical Sites

Include infection control practices on your clinical evaluation grading tool. Evaluation should be done on an ongoing basis throughout <u>all</u> clinical experiences. Continued emphasis on practicing infection control is essential to the safety of the students, staff, and residents.

• Keep Records

Due to the legal accountability involved with the materials contained within this document, specific record keeping must be followed within each health occupation program.

The following documents must be maintained as part of each **student's record**:

1. Immunization Record (Appendix B) - 2 years

2. Infection Control Achievement Test (Appendix K) and Skill Competency Checklists - 2 years

3. Hepatitis B Vaccination Declination Form (Appendix C) - permanent record

4. Permission Form for Hepatitis B Vaccination (Appendix G) - only if vaccination is given by the instructor - permanent record

5. Exposure Incident Reports (2) - permanent record

    a) Medical Facility Form
    b) Educational Facility Form

The following documents must be kept as part of the **classroom file**:

1. Record of participation in informational meeting for students and parents (Appendix F) - 2 years

2. Checklist for maintenance of documents listed above - A sample checklist is included at Appendix L. The "Comments" column should be used to include such information as declined vaccination, exposure incident, and medical conditions or concerns (e.g., TB test +). - 2 years

As with all information in these areas, it is important to keep the information in student records and files confidential. Information must not be disclosed or reported to anyone without the student's and/or parent's/guardian's written consent (except as required by law).

Appendix A

Sample Letter to Administrators, Directors, and Counselors

(on school letterhead)

MEMO

TO: Administrators, Directors, and Counselors

FROM: Health Occupations Educator

RE: Health Program Clinical Experiences and Infection Control

Safety of students is of foremost concern for all staff involved with the education of students. Preventing the spread of disease from blood and other potentially infectious materials has been addressed in health care education for years. With the advent of "AIDS," the general public has become increasingly aware of the risks associated with caring for patients in health care settings. The 1991 ruling of Occupational Safety and Health Administration (OSHA) requiring education and immunization against the Hepatitis B Virus for employees in health care has forced schools whose students have direct contact with patients during clinicals to address the need for students to be immunized. Literature has encouraged the administration of Hepatitis B immunization for more than 10 years; however in light of the OSHA ruling, we must now evaluate the necessity of immunization and what is safe practice.

As a result of the above history and many questions from health care educators, the Missouri Department of Elementary and Secondary Education (MDESE) chose to develop a Protocol Document to recommend action on this issue. The Protocol Document was developed with the assistance of the Instructional Materials Laboratory (IML) and an Advisory Committee consisting of health educators at both adult and secondary levels, infection control experts, directors of vocational schools, and the supervisor of health occupations education MDESE. A model protocol document was used in the initial phase to direct what might be included in the Missouri document.

Included in the Missouri Protocol Document is current background information about Body Substance Precautions, an outline of the minimum content students should master before beginning clinicals, a recommendation of immunizations for students having direct patient contact during clinical settings, an outline for parent informational meetings for secondary students, and various forms to use in maintaining records for students.

The advisory committee recognized that health education programs have a strong commitment to teaching students about infection control. This Protocol Document should have minimal effect on the content of courses taught because many programs already include more depth than the minimum suggested in this document. However, documentation of mastery of the content is essential. Most questions deal with whether to require the Hepatitis immunization. This and other immunization recommendations have been addressed along with a sample declination form for those students who choose not to be immunized.

This Protocol Document is a state recommendation. Actual implementation of an infection control policy for students in clinical sites will remain the responsibility of individual schools. Questions addressed to the Missouri Department of Education will be answered using the Protocol Document as a standard.

Appendix B

Sample Immunization Record
Health Occupations Education
(on front)

Sample Record for
Mastery of Student Outcomes
(on back)

Immunization Record
Health Occupations Education

Health Occupations Program _____

Student Name _____

Date Enrolled in Program _____

Date Exited Program _____

Required*	Date(s)	Recommended	Date(s)
PPD Results: + −	Given_____ Read_ _____	Influenza	
DPT		Hepatitis B: 1st Injection	
MMR		2nd Injection	
Oral Polio		3rd injection	

*Documentation of immunizations or proof of immunity must be presented for enrollment into HOE program.

Chickenpox: _____ yes _____ no

Other Immunizations:

_____ _____

Instructor's Signature Date Form Completed

Record for
Mastery of Student Outcomes

_____has mastered the student outcomes.
(student's name)

NOTE: Indicate date when mastered in the box provided.

Date Mastered	Student Outcomes
	Match modes of transmission of microorganisms.
	Identify methods to break the chain of infection.
	Identify situations that will facilitate or hinder the growth of microorganisms.
	Match modes of transmission for common infectious diseases in health care settings.
	Define an exposure incident.
	List steps to follow when an exposure occurs.
	Select appropriate personal protective equipment in simulated clinical situations.
	Wash hands.
	Don and remove examination gloves.
	Don and remove isolation gown and mask.
	Apply Body Substance Precautions while working in health care settings.

Appendix C

Sample Hepatitis B Vaccination Declination Form

(NOTE: Retain this form in student's permanent record.)

Hepatitis B Vaccination Declination Form

Date: _____

Student Name: _____

Student SS#: _____

I understand that during my clinical experience I may be exposed to blood or other potentially infectious materials; therefore, I may be at risk of acquiring Hepatitis B Virus (HBV) infection. School officials have recommended that I be vaccinated with Hepatitis B vaccine at my own expense. However, I decline the Hepatitis B vaccination at this time. I understand that by declining this vaccine I continue to be at risk of acquiring Hepatitis B, a serious disease.

_____ _____
Student's Signature Date

_____ _____
*Parent's/Legal Guardian's Signature Date

_____ _____
**Health Occupations Instructor's Signature Date

_____ _____
**Notary Date

*Only if student is under 18 years of age

**Health Occupations Instructor's signature is needed when the form is signed in the instructor's presence. Notary's Signature is only needed if not signed in the presence of the Health Occupations Instructor.

NOTE: Retain this form in student's permanent record.

Appendix D

Sample Letter to Students and Parents for Informational Meeting on Infection Control and Health Occupations Students

(on school letterhead)

Dear Student and Parent/Guardian:

We appreciate your interest in health care education. As educators and health care professionals, we are very interested in the health and welfare of students who participate in our health occupations education program.

All students who enroll in health occupations education programs are taught infection control procedures and work practices so that they know how to protect themselves and others against disease.

You are invited to learn more about the immunizations recommended for students. These will be discussed along with practices and procedures which substantially reduce risks for contracting disease.

Please join us for an informational meeting scheduled for (date) at (location) from (time).

Participation is required for enrollment in secondary programs.

Thank you for your support.

Sincerely,

(teacher)
(administrator)

Appendix E

Sample Agenda for Informational Meeting on Infection Control and Health Occupation Students

Informational Meeting
on
Infection Control and Health Occupations Students

A G E N D A

1. Introduction

2. Overview goals of meeting

3. Occupational risks of bloodborne and other diseases to health care workers

4. Preventative procedures taught to reduce risk and minimize exposure (This protocol document is consistent with CDC recommendations & OSHA regulations.)

5. Identify recommended immunizations

    a. discuss vaccination as the best defense against HBV
    b. proof of immunity
    c. declination statement
    d. Hepatitis B vaccination permission form
    e. cost

6. Inform about an exposure incident

    a. what constitutes an exposure
    b. follow up for exposed student

7. Question and answer period

8. Signatures for documents

    a. record of participants
    b. *signed declination form or ask for return within reasonable time frame (2 weeks); parent/guardian signature **MUST** be on declination statement if student is under 18 years of age (Appendix C)
    c. signature for permission to give Hepatitis B vaccination; only if the instructor is giving Hepatitis B vaccination (Appendix G)

*Form must be notarized when signed if not signed in the presence of the instructor.

Appendix F

Sample Record of Participants for the Informational Meeting on Infection Control and Health Occupations Students

Informational Meeting
Infection Control and Health Occupations Students

Record of Participants

Date of Session: _____

NOTE: Attach session summary.

Instructor(s)

_____

_____

_____

Parent's/Legal Guardian's Signature	Student's Signature

(continues on back of form)

Parent's/Legal Guardian's Signature	Student's Signature

Appendix G

Sample Permission Form for Hepatitis B Vaccination

(From the U.S. Department of Health and Human Services)

(NOTE: Retain this form in student's permanent record.)

IMPORTANT INFORMATION ABOUT
HEPATITIS B, HEPATITIS B VACCINE, AND HEPATITIS B IMMUNE GLOBULIN

PLEASE READ THIS CAREFULLY

HEPATITIS B 1/31/92

WHAT IS HEPATITIS B?

Hepatitis B is an infection of the liver caused by the hepatitis B virus (HBV). HBV is one of several types of viruses (infections) that can cause hepatitis. There is a vaccine that will prevent HBV infection.

Hepatitis B virus infection may occur in two phases. The acute phase occurs just after a person becomes infected, and can last from a few weeks to several months. Some people recover after the acute phase, but others remain infected for the rest of their lives. They go into the chronic phase and become "chronic carriers." The virus remains in their liver and blood.

Acute hepatitis B usually begins with symptoms such as loss of appetite, extreme tiredness, nausea, vomiting, and stomach pain. Dark urine and jaundice (yellow eyes and skin) are also common, and skin rashes and joint pain can occur. Over half of the people who become infected with HBV never become sick, but some may later have long-term liver disease from their HBV infection.

About 300,000 children and adults in the U.S. become infected with the hepatitis B virus each year. More than 10,000 of them need to be hospitalized and 250 die. Most of these deaths are from liver failure.

HBV is passed from one person to another in blood or certain body secretions. This may occur during sexual relations or when sharing things like toothbrushes, razors, or needles used to inject drugs. A baby can get HBV at birth from its mother. A doctor or nurse may get HBV if blood from an infected patient enters through a cut or accidental needlestick.

Those people infected with HBV who become "chronic carriers" can spread the infection to others throughout their lifetime. They can also develop long-term liver disease such as cirrhosis (which destroys the liver) or liver cancer.

WHO BECOMES A CHRONIC CARRIER OF HBV?

Of every 100 young adults who catch HBV, 6 to 10 become chronic carriers. Children who become infected with HBV are more likely to become chronic carriers than adults. Of every 10 infants who are infected at birth, up to 9 will become chronic HBV carriers. The younger a child is when the infection occurs, the more likely that child will become a carrier.

About one-fourth of hepatitis B carriers develop a disease called "chronic active hepatitis." People with chronic active hepatitis often get cirrhosis of the liver, and many die from liver failure. In addition, they are much more likely than other people to get cancer of the liver. In the United States, about 4,000 hepatitis B carriers die each year from cirrhosis and more than 800 die from liver cancer.

HEPATITIS B VIRUS INFECTIONS IN CHILDREN

Each year 22,000 children are born to women who are carriers of HBV. In the past, 4,000-5,000 of these infants were born with HBV infection. Almost all of these infections can now be prevented. A pregnant woman can find out if she is infected with HBV by getting a simple blood test. If she is infected, she can protect her newborn infant from infection by getting the child immunized with hepatitis B vaccine and hepatitis B immune globulin (HBIG) as soon after birth as possible.

Certain groups of children are more likely to get HBV because they or their parents come from countries where HBV infection is much more common than in the United States. (These are countries in Asia, Africa, South America, the South Pacific and eastern and southern Europe.) It is very important that these children receive hepatitis B vaccine at birth or at least before they are one year old.

Why ALL Children Should Receive Hepatitis B Vaccine

Anyone can get HBV infection. In fact, about 1 out of every 20 people in the United States has been infected with HBV. Because of the serious liver disease, cancer, and death resulting from HBV infection, all infants in the United States should be vaccinated against this virus. This will protect them when they become teenagers and adults, and are most likely to catch hepatitis B.

HEPATITIS B VACCINE AND HEPATITIS B IMMUNE GLOBULIN

Hepatitis B Vaccine

Hepatitis B vaccine is given by injection. Three doses, given on three different dates, are needed for full protection. Exactly when these three doses are given can vary. Infants can get the vaccine at the same time as other baby shots, or during regular visits for well child care. Your doctor or nurse will tell you when the three shots should be given.

The hepatitis B vaccine prevents HBV infection in 85%-95% of people who get all three shots. Studies have shown that in these people, protection lasts at least 10 years. Booster doses are not recommended at this time.

Who Should Get Hepatitis B Vaccine?

Infants

1. *Infants born to women who are infected with HBV* - Infants born to infected women or to women who are chronic HBV carriers should be given hepatitis B vaccine and HBIG (see below) within 12 hours of birth. They should then get their second and third vaccine doses at 1 and 6 months of age. If they don't get these shots, these infants will very likely be infected with HBV and become chronic carriers themselves. Pregnant women can find out if they are infected with HBV by getting a simple blood test, which is now recommended as a routine part of their prenatal care.
2. *Infants born to healthy women (non-carriers of HBV)* - Vaccination during infancy and early childhood is recommended for all infants in the United States to prevent HBV infection and chronic HBV carriage. Infants should get their first dose of vaccine either at birth or at 1-2 months of age. The second dose can be given 1 to 3 months later, and the third dose between 6 and 18 months of age. Hepatitis B vaccine can safely be given at the same time as the other vaccines a child normally receives.

(CONTINUED ON BACK)

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Special Childhood Populations

Immigrant and refugee children from parts of the world where HBV infection is common (Asia, Africa, South America, South Pacific and eastern and southern Europe) are at high risk of HBV infection. All immigrant and refugee children 7 years of age and younger should get hepatitis B vaccine.

Adults and Other Groups

Hepatitis B vaccine is also recommended for adolescents and adults at high risk of getting HBV infection. This includes 1) people who are exposed to blood or blood products in their work (health care workers or emergency care responders, for instance); 2) clients and staff of institutions for the developmentally disabled, as well as clients and staff of group homes, where any of the residents is a chronic carrier of HBV; 3) hemodialysis patients; 4) men who have sex with men; 5) users of injectable drugs; 6) people with medical conditions (such as hemophilia) who receive blood products to help their blood clot; 7) people who live with, or have sex with, HBV carriers; 8) people who have more than one sexual partner, or people who are treated for sexually transmitted diseases; and 9) people who travel to, or live in, parts of the world where HBV infections are common.

Hepatitis B vaccine is also recommended for people who have been exposed to HBV. This includes people who have never been vaccinated for hepatitis B, and who: (1) have an accident in which blood containing HBV enters their body through the skin or mucous membrane; or, (2) have sexual contact with someone with acute hepatitis B. In some cases, hepatitis B vaccine should be started at the same time as treatment with HBIG (see below).

Hepatitis B Immune Globulin (HBIG)

HBIG is often given along with hepatitis B vaccine to people who have been exposed to HBV. It gives protection from the virus for the first 1 to 3 months; then the vaccine takes over and gives long lasting protection. HBIG is made from human plasma (a part of the blood). Any viruses found in the blood are killed during its preparation, and no one has ever been known to get hepatitis B or AIDS or any other virus from HBIG. Most people need only one dose to protect them after exposure to HBV.

Who should get Hepatitis B Immune Globulin?

HBIG is recommended for the following people. (For most people, the first dose of hepatitis B vaccine should be given at the same time as the HBIG.)

Infants

1. *Infants born to women who are infected with HBV* - These infants should get one dose of HBIG and the first dose of vaccine within 12 hours of birth (see above).
2. *Unvaccinated infants less than 12 months old whose mother (or primary caregiver) has acute hepatitis B* - All infants less than 12 months can easily become HBV carriers after hepatitis B infection. Exposed infants who have not been vaccinated should get <u>one dose of HBIG and begin the hepatitis B vaccine series</u>. Infants who have already been vaccinated do not need HBIG.

Adults and Others

1. *Persons accidentally exposed to blood or body fluids that may contain HBV* - Exposed persons who have not been vaccinated should get one dose of HBIG and begin the hepatitis B vaccine series. Exposed persons who have had hepatitis B shots may also need HBIG. A doctor or nurse should make that decision.
2. *People having sexual contact with anyone who has acute hepatitis B* - These people should get a dose of HBIG within 14 days of the most recent sexual contact with anyone who has acute hepatitis B. They may also need to get hepatitis B vaccine.

POSSIBLE SIDE EFFECTS FROM HEPATITIS B VACCINE AND HBIG

The most common side effect of hepatitis B vaccination is soreness where the shot is given. Tenderness at the injection site has been reported in up to 46% of infants vaccinated. Of children who get the vaccine, 2% to 5% may get a fever greater than 102°F or become irritable. When hepatitis B vaccine is given with other childhood vaccines, it does not make these mild reactions worse than would be seen with the other vaccines alone. HBIG has sometimes been associated with swelling and hives. As with any drug, there is a slight chance of allergic or more serious reactions with either the vaccine or HBIG. However, no serious reactions have been shown to occur due to the hepatitis B recombinant vaccines. (These are the ones currently in use.) A person cannot get hepatitis B or AIDS from a hepatitis B shot or from an HBIG shot.

Before recombinant vaccines were used in the United States, another type of hepatitis B vaccine (plasma-derived) was used. Surveillance showed that getting the first dose of plasma-derived hepatitis B vaccine may have been associated with the paralytic illness Guillain-Barré syndrome (GBS). However, the recombinant vaccine has not been shown to be associated with GBS.

PREGNANCY

Very little information is available about the safety of the vaccine or HBIG for unborn babies. If a pregnant woman gets an HBV infection, it can cause severe disease in the mother and chronic HBV infection in the newborn baby. On the other hand, both the vaccine and HBIG should be safe for the unborn baby because they contain no infectious material. Therefore, pregnant women who are at risk of HBV infection can be given both hepatitis B vaccine and HBIG.

QUESTIONS

If you have any questions about hepatitis B, HBIG, or hepatitis B vaccine, please ask us now or call your doctor or health department before you sign this form.

REACTIONS

If the person who received HBIG and/or the vaccine gets sick and visits a doctor, hospital, or clinic during the 4 weeks after receiving the vaccine, please report it to:

MISSOURI DEPARTMENT OF HEALTH
BUREAU OF IMMUNIZATION
P.O. BOX 570
JEFFERSON CITY, MO 65102-0570
Telephone: (314) 751-6133

or to:

I have been given a copy and have read or have had explained to me the information on this form about hepatitis B and hepatitis B vaccine. I have had a chance to ask questions which were answered to my satisfaction. I believe I understand the benefits and risks of the hepatitis B vaccine and request that it be given to me or to the person named below for whom I am authorized to make this request. Hepatitis B 1/31/92

INFORMATION ABOUT PERSON TO RECEIVE VACCINE (PLEASE PRINT)					FOR CLINIC USE
LAST NAME	FIRST NAME	MI	BIRTHDATE	AGE	CLINIC IDENTIFICATION
ADDRESS					DATE VACCINATED
CITY	COUNTY				MANUF. AND LOT NO.
STATE	ZIP CODE				SITE OF INJECTION
SIGNATURE of person to receive vaccine or person authorized to make the request X			DATE		IMM. GIVEN TODAY 1 2 3

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Appendix H

Occupational Safety and Health Administration (OSHA)
Occupational Exposure to Bloodborne Pathogens

Final Rule
December 1991

XI. The Standard

General Industry

Part 1910 of title 29 of the Code of Federal Regulations is amended as follows:

PART 1910—[AMENDED]

Subpart Z—[Amended]

1. The general authority citation for subpart Z of 29 CFR part 1910 continues to read as follows and a new citation for § 1910.1030 is added:

Authority: Secs. 6 and 8, Occupational Safety and Health Act, 29 U.S.C. 655, 657, Secretary of Labor's Orders Nos. 12–71 (36 FR 8754), 8–76 (41 FR 25059), or 9–83 (48 FR 35736), as applicable; and 29 CFR part 1911.

* * * * *

Section 1910.1030 also issued under 29 U.S.C. 653.

* * * * *

2. Section 1910.1030 is added to read as follows:

§ 1910.1030 Bloodborne Pathogens.

(a) *Scope and Application.* This section applies to all occupational exposure to blood or other potentially infectious materials as defined by paragraph (b) of this section.

(b) *Definitions.* For purposes of this section, the following shall apply:

Assistant Secretary means the Assistant Secretary of Labor for Occupational Safety and Health, or designated representative.

Blood means human blood, human blood components, and products made from human blood.

Bloodborne Pathogens means pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

Clinical Laboratory means a workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious materials.

Contaminated means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

Contaminated Laundry means laundry which has been soiled with blood or other potentially infectious materials or may contain sharps.

Contaminated Sharps means any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.

Decontamination means the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.

Director means the Director of the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designated representative.

Engineering Controls means controls (e.g., sharps disposal containers, self-sheathing needles) that isolate or remove the bloodborne pathogens hazard from the workplace.

Exposure Incident means a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties.

Handwashing Facilities means a facility providing an adequate supply of running potable water, soap and single use towels or hot air drying machines.

Licensed Healthcare Professional is a person whose legally permitted scope of practice allows him or her to independently perform the activities required by paragraph (f) Hepatitis B Vaccination and Post-exposure Evaluation and Follow-up.

HBV means hepatitis B virus.

HIV means human immunodeficiency virus.

Occupational Exposure means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

Other Potentially Infectious Materials means

(1) The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids;

(2) Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and

(3) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

Parenteral means piercing mucous membranes or the skin barrier through such events as needlesticks, human bites, cuts, and abrasions.

Personal Protective Equipment is specialized clothing or equipment worn by an employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts or blouses) not intended to function as protection against a hazard are not considered to be personal protective equipment.

Production Facility means a facility engaged in industrial-scale, large-volume or high concentration production of HIV or HBV.

Regulated Waste means liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; and pathological and microbiological wastes containing blood or other potentially infectious materials.

Research Laboratory means a laboratory producing or using research-laboratory-scale amounts of HIV or HBV. Research laboratories may produce high concentrations of HIV or HBV but not in the volume found in production facilities.

Source Individual means any individual, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the employee. Examples include, but are not limited to, hospital and clinic patients; clients in institutions for the developmentally disabled; trauma victims; clients of drug and alcohol treatment facilities; residents of hospices and nursing homes; human remains; and individuals who donate or sell blood or blood components.

Sterilize means the use of a physical or chemical procedure to destroy all microbial life including highly resistant bacterial endospores.

Universal Precautions is an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

Work Practice Controls means controls that reduce the likelihood of exposure by altering the manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed technique).

(c) *Exposure control*—(1) *Exposure Control Plan.* (i) Each employer having an employee(s) with occupational exposure as defined by paragraph (b) of this section shall establish a written Exposure Control Plan designed to

eliminate or minimize employee exposure.

(ii) The Exposure Control Plan shall contain at least the following elements:

(A) The exposure determination required by paragraph(c)(2),

(B) The schedule and method of implementation for paragraphs (d) Methods of Compliance, (e) HIV and HBV Research Laboratories and Production Facilities, (f) Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up, (g) Communication of Hazards to Employees, and (h) Recordkeeping, of this standard, and

(C) The procedure for the evaluation of circumstances surrounding exposure incidents as required by paragraph (f)(3)(i) of this standard.

(iii) Each employer shall ensure that a copy of the Exposure Control Plan is accessible to employees in accordance with 29 CFR 1910.20(e).

(iv) The Exposure Control Plan shall be reviewed and updated at least annually and whenever necessary to reflect new or modified tasks and procedures which affect occupational exposure and to reflect new or revised employee positions with occupational exposure.

(v) The Exposure Control Plan shall be made available to the Assistant Secretary and the Director upon request for examination and copying.

(2) *Exposure determination.* (i) Each employer who has an employee(s) with occupational exposure as defined by paragraph (b) of this section shall prepare an exposure determination. This exposure determination shall contain the following:

(A) A list of all job classifications in which all employees in those job classifications have occupational exposure;

(B) A list of job classifications in which some employees have occupational exposure, and

(C) A list of all tasks and procedures or groups of closely related task and procedures in which occupational exposure occurs and that are performed by employees in job classifications listed in accordance with the provisions of paragraph (c)(2)(i)(B) of this standard.

(ii) This exposure determination shall be made without regard to the use of personal protective equipment.

(d) *Methods of compliance*—(1) *General*—Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials.

(2) *Engineering and work practice controls.* (i) Engineering and work practice controls shall be used to eliminate or minimize employee exposure. Where occupational exposure remains after institution of these controls, personal protective equipment shall also be used.

(ii) Engineering controls shall be examined and maintained or replaced on a regular schedule to ensure their effectiveness.

(iii) Employers shall provide handwashing facilities which are readily accessible to employees.

(iv) When provision of handwashing facilities is not feasible, the employer shall provide either an appropriate antiseptic hand cleanser in conjunction with clean cloth/paper towels or antiseptic towelettes. When antiseptic hand cleansers or towelettes are used, hands shall be washed with soap and running water as soon as feasible.

(v) Employers shall ensure that employees wash their hands immediately or as soon as feasible after removal of gloves or other personal protective equipment.

(vi) Employers shall ensure that employees wash hands and any other skin with soap and water, or flush mucous membranes with water immediately or as soon as feasible following contact of such body areas with blood or other potentially infectious materials.

(vii) Contaminated needles and other contaminated sharps shall not be bent, recapped, or removed except as noted in paragraphs (d)(2)(vii)(A) and (d)(2)(vii)(B) below. Shearing or breaking of contaminated needles is prohibited.

(A) Contaminated needles and other contaminated sharps shall not be recapped or removed unless the employer can demonstrate that no alternative is feasible or that such action is required by a specific medical procedure.

(B) Such recapping or needle removal must be accomplished through the use of a mechanical device or a one-handed technique.

(viii) Immediately or as soon as possible after use, contaminated reusable sharps shall be placed in appropriate containers until properly reprocessed. These containers shall be:

(A) Puncture resistant;

(B) Labeled or color-coded in accordance with this standard;

(C) Leakproof on the sides and bottom; and

(D) In accordance with the requirements set forth in paragraph (d)(4)(ii)(E) for reusable sharps.

(ix) Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited in work areas where there is a reasonable likelihood of occupational exposure.

(x) Food and drink shall not be kept in refrigerators, freezers, shelves, cabinets or on countertops or benchtops where blood or other potentially infectious materials are present.

(xi) All procedures involving blood or other potentially infectious materials shall be performed in such a manner as to minimize splashing, spraying, spattering, and generation of droplets of these substances.

(xii) Mouth pipetting/suctioning of blood or other potentially infectious materials is prohibited.

(xiii) Specimens of blood or other potentially infectious materials shall be placed in a container which prevents leakage during collection, handling, processing, storage, transport, or shipping.

(A) The container for storage, transport, or shipping shall be labeled or color-coded according to paragraph (g)(1)(i) and closed prior to being stored, transported, or shipped. When a facility utilizes Universal Precautions in the handling of all specimens, the labeling/color-coding of specimens is not necessary provided containers are recognizable as containing specimens. This exemption only applies while such specimens/containers remain within the facility. Labeling or color-coding in accordance with paragraph (g)(1)(i) is required when such specimens/containers leave the facility.

(B) If outside contamination of the primary container occurs, the primary container shall be placed within a second container which prevents leakage during handling, processing, storage, transport, or shipping and is labeled or color-coded according to the requirements of this standard.

(C) If the specimen could puncture the primary container, the primary container shall be placed within a secondary container which is puncture-resistant in addition to the above characteristics.

(xiv) Equipment which may become contaminated with blood or other potentially infectious materials shall be examined prior to servicing or shipping and shall be decontaminated as necessary, unless the employer can demonstrate that decontamination of such equipment or portions of such equipment is not feasible.

(A) A readily observable label in accordance with paragraph (g)(1)(i)(H) shall be attached to the equipment stating which portions remain contaminated.

(B) The employer shall ensure that this information is conveyed to all affected employees, the servicing representative, and/or the manufacturer, as appropriate, prior to handling, servicing, or shipping so that appropriate precautions will be taken.

(3) Personal protective equipment—(i) Provision. When there is occupational exposure, the employer shall provide, at no cost to the employee, appropriate personal protective equipment such as, but not limited to, gloves, gowns, laboratory coats, face shields or masks and eye protection, and mouthpieces, resuscitation bags, pocket masks, or other ventilation devices. Personal protective equipment will be considered "appropriate" only if it does not permit blood or other potentially infectious materials to pass through to or reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes under normal conditions of use and for the duration of time which the protective equipment will be used.

(ii) Use. The employer shall ensure that the employee uses appropriate personal protective equipment unless the employer shows that the employee temporarily and briefly declined to use personal protective equipment when, under rare and extraordinary circumstances, it was the employee's professional judgment that in the specific instance its use would have prevented the delivery of health care or public safety services or would have posed an increased hazard to the safety of the worker or co-worker. When the employee makes this judgement, the circumstances shall be investigated and documented in order to determine whether changes can be instituted to prevent such occurences in the future.

(iii) Accessibility. The employer shall ensure that appropriate personal protective equipment in the appropriate sizes is readily accessible at the worksite or is issued to employees. Hypoallergenic gloves, glove liners, powderless gloves, or other similar alternatives shall be readily accessible to those employees who are allergic to the gloves normally provided.

(iv) Cleaning, Laundering, and Disposal. The employer shall clean, launder, and dispose of personal protective equipment required by paragraphs (d) and (e) of this standard, at no cost to the employee.

(v) Repair and Replacement. The employer shall repair or replace personal protective equipment as needed to maintain its effectiveness, at no cost to the employee.

(vi) If a garment(s) is penetrated by blood or other potentially infectious materials, the garment(s) shall be removed immediately or as soon as feasible.

(vii) All personal protective equipment shall be removed prior to leaving the work area.

(viii) When personal protective equipment is removed it shall be placed in an appropriately designated area or container for storage, washing, decontamination or disposal.

(ix) Gloves. Gloves shall be worn when it can be reasonably anticipated that the employee may have hand contact with blood, other potentially infectious materials, mucous membranes, and non-intact skin; when performing vascular access procedures except as specified in paragraph (d)(3)(ix)(D); and when handling or touching contaminated items or surfaces.

(A) Disposable (single use) gloves such as surgical or examination gloves, shall be replaced as soon as practical when contaminated or as soon as feasible if they are torn, punctured, or when their ability to function as a barrier is compromised.

(B) Disposable (single use) gloves shall not be washed or decontaminated for re-use.

(C) Utility gloves may be decontaminated for re-use if the integrity of the glove is not compromised. However, they must be discarded if they are cracked, peeling, torn, punctured, or exhibit other signs of deterioration or when their ability to function as a barrier is compromised.

(D) If an employer in a volunteer blood donation center judges that routine gloving for all phlebotomies is not necessary then the employer shall:

(*1*) Periodically reevaluate this policy;

(*2*) Make gloves available to all employees who wish to use them for phlebotomy;

(*3*) Not discourage the use of gloves for phlebotomy; and

(*4*) Require that gloves be used for phlebotomy in the following circumstances:

(*i*) When the employee has cuts, scratches, or other breaks in his or her skin;

(*ii*) When the employee judges that hand contamination with blood may occur, for example, when performing phlebotomy on an uncooperative source individual; and

(*iii*) When the employee is receiving training in phlebotomy.

(x) Masks, Eye Protection, and Face Shields. Masks in combination with eye protection devices, such as goggles or glasses with solid side shields, or chin-length face shields, shall be worn whenever splashes, spray, spatter, or droplets of blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can be reasonably anticipated.

(xi) Gowns, Aprons, and Other Protective Body Clothing. Appropriate protective clothing such as, but not limited to, gowns, aprons, lab coats, clinic jackets, or similar outer garments shall be worn in occupational exposure situations. The type and characteristics will depend upon the task and degree of exposure anticipated.

(xii) Surgical caps or hoods and/or shoe covers or boots shall be worn in instances when gross contamination can reasonably be anticipated (e.g., autopsies, orthopaedic surgery).

(4) *Housekeeping.* (i) General. Employers shall ensure that the worksite is maintained in a clean and sanitary condition. The employer shall determine and implement an appropriate written schedule for cleaning and method of decontamination based upon the location within the facility, type of surface to be cleaned, type of soil present, and tasks or procedures being performed in the area.

(ii) All equipment and environmental and working surfaces shall be cleaned and decontaminated after contact with blood or other potentially infectious materials.

(A) Contaminated work surfaces shall be decontaminated with an appropriate disinfectant after completion of procedures; immediately or as soon as feasible when surfaces are overtly contaminated or after any spill of blood or other potentially infectious materials; and at the end of the work shift if the surface may have become contaminated since the last cleaning.

(B) Protective coverings, such as plastic wrap, aluminum foil, or imperviously-backed absorbent paper used to cover equipment and environmental surfaces, shall be removed and replaced as soon as feasible when they become overtly contaminated or at the end of the workshift if they may have become contaminated during the shift.

(C) All bins, pails, cans, and similar receptacles intended for reuse which have a reasonable likelihood for becoming contaminated with blood or other potentially infectious materials shall be inspected and decontaminated on a regularly scheduled basis and cleaned and decontaminated immediately or as soon as feasible upon visible contamination.

(D) Broken glassware which may be contaminated shall not be picked up directly with the hands. It shall be cleaned up using mechanical means.

such as a brush and dust pan, tongs, or forceps.

(E) Reusable sharps that are contaminated with blood or other potentially infectious materials shall not be stored or processed in a manner that requires employees to reach by hand into the containers where these sharps have been placed.

(ii) Regulated Waste.

(A) Contaminated Sharps Discarding and Containment. (1) Contaminated sharps shall be discarded immediately or as soon as feasible in containers that are:

(i) Closable;

(ii) Puncture resistant;

(iii) Leakproof on sides and bottom; and

(iv) Labeled or color-coded in accordance with paragraph (g)(1)(i) of this standard.

(2) During use, containers for contaminated sharps shall be:

(i) Easily accessible to personnel and located as close as is feasible to the immediate area where sharps are used or can be reasonably anticipated to be found (e.g., laundries);

(ii) Maintained upright throughout use; and

(iii) Replaced routinely and not be allowed to overfill.

(3) When moving containers of contaminated sharps from the area of use, the containers shall be:

(i) Closed immediately prior to removal or replacement to prevent spillage or protrusion of contents during handling, storage, transport, or shipping;

(ii) Placed in a secondary container if leakage is possible. The second container shall be:

(A) Closable;

(B) Constructed to contain all contents and prevent leakage during handling, storage, transport, or shipping; and

(C) Labeled or color-coded according to paragraph (g)(1)(i) of this standard.

(4) Reusable containers shall not be opened, emptied, or cleaned manually or in any other manner which would expose employees to the risk of percutaneous injury.

(B) Other Regulated Waste Containment.(1) Regulated waste shall be placed in containers which are:

(i) Closable;

(ii) Constructed to contain all contents and prevent leakage of fluids during handling, storage, transport or shipping;

(iii) Labeled or color-coded in accordance with paragraph (g)(1)(i) this standard; and

(iv) Closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.

(2) If outside contamination of the regulated waste container occurs, it shall be placed in a second container. The second container shall be:

(i) Closable;

(ii) Constructed to contain all contents and prevent leakage of fluids during handling, storage, transport or shipping;

(iii) Labeled or color-coded in accordance with paragraph (g)(1)(i) of this standard; and

(iv) Closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.

(C) Disposal of all regulated waste shall be in accordance with applicable regulations of the United States, States and Territories, and political subdivisions of States and Territories.

(iv) Laundry.

(A) Contaminated laundry shall be handled as little as possible with a minimum of agitation. (1) Contaminated laundry shall be bagged or containerized at the location where it was used and shall not be sorted or rinsed in the location of use.

(2) Contaminated laundry shall be placed and transported in bags or containers labeled or color-coded in accordance with paragraph (g)(1)(i) of this standard. When a facility utilizes Universal Precautions in the handling of all soiled laundry, alternative labeling or color-coding is sufficient if it permits all employees to recognize the containers as requiring compliance with Universal Precautions.

(3) Whenever contaminated laundry is wet and presents a reasonable likelihood of soak-through of or leakage from the bag or container, the laundry shall be placed and transported in bags or containers which prevent soak-through and/or leakage of fluids to the exterior.

(B) The employer shall ensure that employees who have contact with contaminated laundry wear protective gloves and other appropriate personal protective equipment.

(C) When a facility ships contaminated laundry off-site to a second facility which does not utilize Universal Precautions in the handling of all laundry, the facility generating the contaminated laundry must place such laundry in bags or containers which are labeled or color-coded in accordance with paragraph (g)(1)(i).

(e) *HIV and HBV Research Laboratories and Production Facilities.* (1) This paragraph applies to research laboratories and production facilities engaged in the culture, production, concentration, experimentation, and manipulation of HIV and HBV. It does not apply to clinical or diagnostic laboratories engaged solely in the analysis of blood, tissues, or organs. These requirements apply in addition to the other requirements of the standard.

(2) Research laboratories and production facilities shall meet the following criteria:

(i) Standard microbiological practices. All regulated waste shall either be incinerated or decontaminated by a method such as autoclaving known to effectively destroy bloodborne pathogens.

(ii) Special practices.

(A) Laboratory doors shall be kept closed when work involving HIV or HBV is in progress.

(B) Contaminated materials that are to be decontaminated at a site away from the work area shall be placed in a durable, leakproof, labeled or color-coded container that is closed before being removed from the work area.

(C) Access to the work area shall be limited to authorized persons. Written policies and procedures shall be established whereby only persons who have been advised of the potential biohazard, who meet any specific entry requirements, and who comply with all entry and exit procedures shall be allowed to enter the work areas and animal rooms.

(D) When other potentially infectious materials or infected animals are present in the work area or containment module, a hazard warning sign incorporating the universal biohazard symbol shall be posted on all access doors. The hazard warning sign shall comply with paragraph (g)(1)(ii) of this standard.

(E) All activities involving other potentially infectious materials shall be conducted in biological safety cabinets or other physical-containment devices within the containment module. No work with these other potentially infectious materials shall be conducted on the open bench.

(F) Laboratory coats, gowns, smocks, uniforms, or other appropriate protective clothing shall be used in the work area and animal rooms. Protective clothing shall not be worn outside of the work area and shall be decontaminated before being laundered.

(G) Special care shall be taken to avoid skin contact with other potentially infectious materials. Gloves shall be worn when handling infected animals and when making hand contact with other potentially infectious materials is unavoidable.

(H) Before disposal all waste from work areas and from animal rooms shall either be incinerated or decontaminated by a method such as autoclaving known to effectively destroy bloodborne pathogens.

(I) Vacuum lines shall be protected with liquid disinfectant traps and high-efficiency particulate air (HEPA) filters or filters of equivalent or superior efficiency and which are checked routinely and maintained or replaced as necessary.

(J) Hypodermic needles and syringes shall be used only for parenteral injection and aspiration of fluids from laboratory animals and diaphragm bottles. Only needle-locking syringes or disposable syringe-needle units (i.e., the needle is integral to the syringe) shall be used for the injection or aspiration of other potentially infectious materials. Extreme caution shall be used when handling needles and syringes. A needle shall not be bent, sheared, replaced in the sheath or guard, or removed from the syringe following use. The needle and syringe shall be promptly placed in a puncture-resistant container and autoclaved or decontaminated before reuse or disposal.

(K) All spills shall be immediately contained and cleaned up by appropriate professional staff or others properly trained and equipped to work with potentially concentrated infectious materials.

(L) A spill or accident that results in an exposure incident shall be immediately reported to the laboratory director or other responsible person.

(M) A biosafety manual shall be prepared or adopted and periodically reviewed and updated at least annually or more often if necessary. Personnel shall be advised of potential hazards, shall be required to read instructions on practices and procedures and shall be required to follow them.

(iii) Containment equipment. (A) Certified biological safety cabinets (Class I, II, or III) or other appropriate combinations of personal protection or physical containment devices, such as special protective clothing, respirators, centrifuge safety cups, sealed centrifuge rotors, and containment caging for animals, shall be used for all activities with other potentially infectious materials that pose a threat of exposure to droplets, splashes, spills, or aerosols.

(B) Biological safety cabinets shall be certified when installed, whenever they are moved and at least annually.

(3) HIV and HBV research laboratories shall meet the following criteria:

(i) Each laboratory shall contain a facility for hand washing and an eye wash facility which is readily available within the work area.

(ii) An autoclave for decontamination of regulated waste shall be available.

(4) HIV and HBV production facilities shall meet the following criteria:

(i) The work areas shall be separated from areas that are open to unrestricted traffic flow within the building. Passage through two sets of doors shall be the basic requirement for entry into the work area from access corridors or other contiguous areas. Physical separation of the high-containment work area from access corridors or other areas or activities may also be provided by a double-doored clothes-change room (showers may be included), airlock, or other access facility that requires passing through two sets of doors before entering the work area.

(ii) The surfaces of doors, walls, floors and ceilings in the work area shall be water resistant so that they can be easily cleaned. Penetrations in these surfaces shall be sealed or capable of being sealed to facilitate decontamination.

(iii) Each work area shall contain a sink for washing hands and a readily available eye wash facility. The sink shall be foot, elbow, or automatically operated and shall be located near the exit door of the work area.

(iv) Access doors to the work area or containment module shall be self-closing.

(v) An autoclave for decontamination of regulated waste shall be available within or as near as possible to the work area.

(vi) A ducted exhaust-air ventilation system shall be provided. This system shall create directional airflow that draws air into the work area through the entry area. The exhaust air shall not be recirculated to any other area of the building, shall be discharged to the outside, and shall be dispersed away from occupied areas and air intakes. The proper direction of the airflow shall be verified (i.e., into the work area).

(5) *Training Requirements.* Additional training requirements for employees in HIV and HBV research laboratories and HIV and HBV production facilities are specified in paragraph (g)(2)(ix).

(f) *Hepatitis B vaccination and post-exposure evaluation and follow-up—(1) General.* (i) The employer shall make available the hepatitis B vaccine and vaccination series to all employees who have occupational exposure, and post-exposure evaluation and follow-up to all employees who have had an exposure incident.

(ii) The employer shall ensure that all medical evaluations and procedures including the hepatitis B vaccine and vaccination series and post-exposure evaluation and follow-up, including prophylaxis, are:

(A) Made available at no cost to the employee;

(B) Made available to the employee at a reasonable time and place;

(C) Performed by or under the supervision of a licensed physician or by or under the supervision of another licensed healthcare professional; and

(D) Provided according to recommendations of the U.S. Public Health Service current at the time these evaluations and procedures take place, except as specified by this paragraph (f).

(iii) The employer shall ensure that all laboratory tests are conducted by an accredited laboratory at no cost to the employee.

(2) *Hepatitis B Vaccination.* (i) Hepatitis B vaccination shall be made available after the employee has received the training required in paragraph (g)(2)(vii)(I) and within 10 working days of initial assignment to all employees who have occupational exposure unless the employee has previously received the complete hepatitis B vaccination series, antibody testing has revealed that the employee is immune, or the vaccine is contraindicated for medical reasons.

(ii) The employer shall not make participation in a prescreening program a prerequisite for receiving hepatitis B vaccination.

(iii) If the employee initially declines hepatitis B vaccination but at a later date while still covered under the standard decides to accept the vaccination, the employer shall make available hepatitis B vaccination at that time.

(iv) The employer shall assure that employees who decline to accept hepatitis B vaccination offered by the employer sign the statement in appendix A.

(v) If a routine booster dose(s) of hepatitis B vaccine is recommended by the U.S. Public Health Service at a future date, such booster dose(s) shall be made available in accordance with section (f)(1)(ii).

(3) *Post-exposure Evaluation and Follow-up.* Following a report of an exposure incident, the employer shall make immediately available to the exposed employee a confidential medical evaluation and follow-up, including at least the following elements:

(i) Documentation of the route(s) of exposure, and the circumstances under which the exposure incident occurred;

(ii) Identification and documentation of the source individual, unless the employer can establish that identification is infeasible or prohibited by state or local law;

(A) The source individual's blood shall be tested as soon as feasible and

after consent is obtained in order to determine HBV and HIV infectivity. If consent is not obtained, the employer shall establish that legally required consent cannot be obtained. When the source individual's consent is not required by law, the source individual's blood, if available, shall be tested and the results documented.

(B) When the source individual is already known to be infected with HBV or HIV, testing for the source individual's known HBV or HIV status need not be repeated.

(C) Results of the source individual's testing shall be made available to the exposed employee, and the employee shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual.

(iii) Collection and testing of blood for HBV and HIV serological status:

(A) The exposed employee's blood shall be collected as soon as feasible and tested after consent is obtained.

(B) If the employee consents to baseline blood collection, but does not give consent at that time for HIV serologic testing, the sample shall be preserved for at least 90 days. If, within 90 days of the exposure incident, the employee elects to have the baseline sample tested, such testing shall be done as soon as feasible.

(iv) Post-exposure prophylaxis, when medically indicated, as recommended by the U.S. Public Health Service;

(v) Counseling; and

(vi) Evaluation of reported illnesses.

(4) *Information Provided to the Healthcare Professional.* (i) The employer shall ensure that the healthcare professional responsible for the employee's Hepatitis B vaccination is provided a copy of this regulation.

(ii) The employer shall ensure that the healthcare professional evaluating an employee after an exposure incident is provided the following information:

(A) A copy of this regulation;

(B) A description of the exposed employee's duties as they relate to the exposure incident;

(C) Documentation of the route(s) of exposure and circumstances under which exposure occurred;

(D) Results of the source individual's blood testing, if available; and

(E) All medical records relevant to the appropriate treatment of the employee including vaccination status which are the employer's responsibility to maintain.

(5) *Healthcare Professional's Written Opinion.* The employer shall obtain and provide the employee with a copy of the evaluating healthcare professional's written opinion within 15 days of the completion of the evaluation.

(i) The healthcare professional's written opinion for Hepatitis B vaccination shall be limited to whether Hepatitis B vaccination is indicated for an employee, and if the employee has received such vaccination.

(ii) The healthcare professional's written opinion for post-exposure evaluation and follow-up shall be limited to the following information:

(A) That the employee has been informed of the results of the evaluation; and

(B) That the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation or treatment.

(iii) All other findings or diagnoses shall remain confidential and shall not be included in the written report.

(6) *Medical recordkeeping.* Medical records required by this standard shall be maintained in accordance with paragraph (h)(1) of this section.

(g) *Communication of hazards to employees*— (1) *Labels and signs.* (i) Labels. (A) Warning labels shall be affixed to containers of regulated waste, refrigerators and freezers containing blood or other potentially infectious material; and other containers used to store, transport or ship blood or other potentially infectious materials, except as provided in paragraph (g)(1)(i)(E), (F) and (G).

(B) Labels required by this section shall include the following legend:

BIOHAZARD

BIOHAZARD

(C) These labels shall be fluorescent orange or orange-red or predominantly so, with lettering or symbols in a contrasting color.

(D) Labels required by affixed as close as feasible to the container by string, wire, adhesive, or other method that prevents their loss or unintentional removal.

(E) Red bags or red containers may be substituted for labels.

(F) Containers of blood, blood components, or blood products that are labeled as to their contents and have been released for transfusion or other clinical use are exempted from the labeling requirements of paragraph (g).

(G) Individual containers of blood or other potentially infectious materials that are placed in a labeled container during storage, transport, shipment or disposal are exempted from the labeling requirement.

(H) Labels required for contaminated equipment shall be in accordance with this paragraph and shall also state which portions of the equipment remain contaminated.

(I) Regulated waste that has been decontaminated need not be labeled or color-coded.

(ii) Signs. (A) The employer shall post signs at the entrance to work areas specified in paragraph (e), HIV and HBV Research Laboratory and Production Facilities, which shall bear the following legend:

BIOHAZARD

BIOHAZARD

(Name of the Infectious Agent)
(Special requirements for entering the area)
(Name, telephone number of the laboratory director or other responsible person.)

(B) These signs shall be fluorescent orange-red or predominantly so, with lettering or symbols in a contrasting color.

(2) *Information and Training.* (i) Employers shall ensure that all employees with occupational exposure participate in a training program which must be provided at no cost to the employee and during working hours.

(ii) Training shall be provided as follows:

(A) At the time of initial assignment to tasks where occupational exposure may take place;

(B) Within 90 days after the effective date of the standard; and

(C) At least annually thereafter.

(iii) For employees who have received training on bloodborne pathogens in the year preceding the effective date of the standard, only training with respect to the provisions of the standard which were not included need be provided.

(iv) Annual training for all employees shall be provided within one year of their previous training.

(v) Employers shall provide additional training when changes such as modification of tasks or procedures or institution of new tasks or procedures affect the employee's occupational exposure. The additional training may be limited to addressing the new exposures created.

(vi) Material appropriate in content and vocabulary to educational level, literacy, and language of employees shall be used.

(vii) The training program shall contain at a minimum the following elements:

(A) An accessible copy of the regulatory text of this standard and an explanation of its contents;

(B) A general explanation of the epidemiology and symptoms of bloodborne diseases;

(C) An explanation of the modes of transmission of bloodborne pathogens;

(D) An explanation of the employer's exposure control plan and the means by which the employee can obtain a copy of the written plan;

(E) An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials;

(F) An explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and personal protective equipment;

(G) Information on the types, proper use, location, removal, handling, decontamination and disposal of personal protective equipment;

(H) An explanation of the basis for selection of personal protective equipment;

(I) Information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine and vaccination will be offered free of charge;

(J) Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials;

(K) An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available;

(L) Information on the post-exposure evaluation and follow-up that the employer is required to provide for the employee following an exposure incident;

(M) An explanation of the signs and labels and/or color coding required by paragraph (g)(1); and

(N) An opportunity for interactive questions and answers with the person conducting the training session.

(viii) The person conducting the training shall be knowledgeable in the subject matter covered by the elements contained in the training program as it relates to the workplace that the training will address.

(ix) Additional Initial Training for Employees in HIV and HBV Laboratories and Production Facilities. Employees in HIV or HBV research laboratories and HIV or HBV production facilities shall receive the following initial training in addition to the above training requirements.

(A) The employer shall assure that employees demonstrate proficiency in standard microbiological practices and techniques and in the practices and operations specific to the facility before being allowed to work with HIV or HBV.

(B) The employer shall assure that employees have prior experience in the handling of human pathogens or tissue cultures before working with HIV or HBV.

(C) The employer shall provide a training program to employees who have no prior experience in handling human pathogens. Initial work activities shall not include the handling of infectious agents. A progression of work activities shall be assigned as techniques are learned and proficiency is developed. The employer shall assure that employees participate in work activities involving infectious agents only after proficiency has been demonstrated.

(h) *Recordkeeping—(1) Medical Records.* (i) The employer shall establish and maintain an accurate record for each employee with occupational exposure, in accordance with 29 CFR 1910.20.

(ii) This record shall include:

(A) The name and social security number of the employee;

(B) A copy of the employee's hepatitis B vaccination status including the dates of all the hepatitis B vaccinations and any medical records relative to the employee's ability to receive vaccination as required by paragraph (f)(2);

(C) A copy of all results of examinations, medical testing, and follow-up procedures as required by paragraph (f)(3);

(D) The employer's copy of the healthcare professional's written opinion as required by paragraph (f)(5); and

(E) A copy of the information provided to the healthcare professional as required by paragraphs (f)(4)(ii)(B)(C) and (D).

(iii) Confidentiality. The employer shall ensure that employee medical records required by paragraph (h)(1) are:

(A) Kept confidential; and

(B) Are not disclosed or reported without the employee's express written consent to any person within or outside the workplace except as required by this section or as may be required by law.

(iv) The employer shall maintain the records required by paragraph (h) for at least the duration of employment plus 30 years in accordance with 29 CFR 1910.20.

(2) *Training Records. (i) Training records shall include the following information:*

(A) The dates of the training sessions;

(B) The contents or a summary of the training sessions;

(C) The names and qualifications of persons conducting the training; and

(D) The names and job titles of all persons attending the training sessions.

(ii) Training records shall be maintained for 3 years from the date on which the training occurred.

(3) *Availability.* (i) The employer shall ensure that all records required to be maintained by this section shall be made available upon request to the Assistant Secretary and the Director for examination and copying.

(ii) Employee training records required by this paragraph shall be provided upon request for examination and copying to employees, to employee representatives, to the Director, and to the Assistant Secretary in accordance with 29 CFR 1910.20.

(iii) Employee medical records required by this paragraph shall be provided upon request for examination and copying to the subject employee, to anyone having written consent of the subject employee, to the Director, and to the Assistant Secretary in accordance with 29 CFR 1910.20.

(4) *Transfer of Records.* (i) The employer shall comply with the requirements involving transfer of records set forth in 29 CFR 1910.20(h).

(ii) If the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall notify the Director, at least three months prior to their disposal and transmit them to the Director, if required by the Director to do so, within that three month period.

(i) *Dates—(1) Effective Date.* The standard shall become effective on March 6, 1992.

(2) The Exposure Control Plan required by paragraph (c)(2) of this section shall be completed on or before May 5, 1992.

(3) Paragraph (g)(2) Information and Training and (h) Recordkeeping shall take effect on or before June 4, 1992.

(4) Paragraphs (d)(2) Engineering and Work Practice Controls, (d)(3) Personal Protective Equipment, (d)(4) Housekeeping, (e) HIV and HBV Research Laboratories and Production Facilities, (f) Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up, and (g) (1) Labels and Signs, shall take effect July 6, 1992.

Appendix A to Section 1910.1030—Hepatitis B Vaccine Declination (Mandatory)

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

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Appendix I

Background Information

Background Information

• Microbiology

In order for someone to develop an infectious disease, many variables must be simultaneously present. The following is a brief description of these variables and their roles in determining if a person will develop an infection or not.

Microorganisms Associated with Causing Infections - In the past, microorganisms were often classified as pathogenic or non-pathogenic. Pathogenic simply means that under the right conditions the organism is capable of causing disease. It is now recognized that the line between pathogenic and non-pathogenic is not well-defined. The numbers or dose of microorganisms, their individual virulence, the portal of entry into the body, and the presence of other microorganisms play a role in whether a microorganism will cause disease or not. Under the right conditions, it is clear that if the host's resistance is lowered, any microorganism can cause an infection. There are no longer any hard and fast rules which divide human microorganisms into pathogenic or non-pathogenic.

Host Factors - In addition to the microbiological variables, specific host characteristics are prime determinants of the establishment of an infectious disease. The general health of the host and the status of his/her immune system, past clinical history, and a variety of iatrogenic insults such as trauma, all play a role in determining whether infection will transpire. All of the following predispose a person to infection: underlying diseases such as diabetes, physical conditions such as age and obesity, exposure to specific medications such as chemotherapy or treatment with irradiation which lower the immune response, and accidental or surgical trauma. Under the right conditions, when the host's resistance is lowered, normal microbial flora have the opportunity to cause disease.

Sources of Infections - The microorganisms that cause infection come from a variety of sources, however there are two primary sources of infection: the animate and inanimate environment. It is of major importance to note that the primary source of infection is people (residents[1], health care workers, visitors), not the inanimate environment. This includes people with outward signs and symptoms of disease as well as those who are colonized with microorganisms. Most often nosocomial disease is a result of simple transient carriage of microorganisms from one person to another. In all human beings, body sites such as mucous membranes (eye, nose, mouth, vagina, and rectum) contain microorganisms that are capable of causing disease when deposited in an otherwise sterile body site. Body fluids such as feces, urine, and respiratory secretions often contain microorganisms that are also capable of causing disease.

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[1] NOTE: Throughout this manual the term "residents" will be used when referring to residents, patients, or clients.

Inanimate objects such as contaminated instruments, devices, fluids, machines, and so forth are also sources of microorganisms that are capable of causing disease. Although these sources have been emphasized as playing an important role in disease transmission in the past and the present, their relative importance is small compared to the primary source of infection which is people.

Disease Transmission - To properly comprehend disease risks, the mechanism by which a microorganism gets from its source to a susceptible host must be understood. In spite of perceptions that there are numerous methods of transmitting infectious diseases, the manner in which diseases can be transmitted from a source to a host is limited. There are four basic methods by which infectious diseases can be transmitted: 1. **vectorborne** 2. **contact** 3. **airborne** and 4. **vehicle**. All infectious diseases are transmitted by one of these four methods or a combination of them.

Some diseases are transmitted by **vectors**. Malaria, Yellow Fever, Rocky Mountain Spotted Fever, and Lyme Disease are examples of vectorborne diseases. These are primarily diseases transmitted by vectors such as mosquitoes, ticks, and other blood-sucking insects.

A primary method by which diseases are transmitted is known as **contact** transmission. Contact transmission of disease is further broken down into three sub-categories: direct contact, indirect contact, and droplet contact. Direct contact implies a direct physical transfer of microorganisms by skin-to-skin contact. A very high percentage of all infectious disease transmission may occur as a result of direct contact. This is the primary reason for the tremendous emphasis on the importance of handwashing within health care facilities. It is often written that handwashing is the single most important practice in preventing the spread of disease. Unfortunately, this emphasis has not resulted in an appropriate response on the part of health care professionals. Recent studies continue to demonstrate inadequate handwashing practices among physicians, nurses, and other allied health personnel. Personnel are often observed going from resident to resident or from one body site to another on the same resident without proper attention to handwashing practices. Sexually Transmitted Diseases (STD's) are also generally transmitted through direct skin-to-skin contact. Examples of diseases that are transmitted through direct contact would include most nosocomial pathogens such as staphylococci, Gram-negative bacteria, and certain fungi. Hepatitis B and infection with the human immunodeficiency virus can result from direct sexual contact.

Indirect contact occurs when an inanimate source of infection such as a contaminated medical device, solution, or machine is used on a resident and when organisms are transmitted indirectly to the resident. Foley catheters, intra-vascular devices, pressure transducers, infusates, dialysis machines, endoscopes, and a variety of other medical devices have been implicated in transmitting micro-organisms that have caused major outbreaks of nosocomial disease. All of these devices are used frequently in surgical residents and increase the risk of infection.

The third sub-category of contact transmission is known as droplet contact. This type of transmission occurs when someone coughs or sneezes or creates large droplet-sized particles during a procedure and the microorganism is carried a short distance (within 3 feet). These large particles come into contact with the mucous membranes in the nose, mouth, or conjunctivae and may cause disease. At times this type of transmission is misunderstood. Diseases such as the common cold have often been described as being airborne. In fact, they are generally transmitted by large droplets from a sneeze or cough which are deposited on horizontal surfaces and picked up on an individual's hands and "self-inoculated" into the eyes, nose, or mouth. In some settings such as hospital operating or emergency rooms, droplets of body fluids may be produced by a variety of procedures such as in orthopedic surgery. Those which cause splashing may play a role in transmitting diseases from resident to health care worker.

Airborne transmission of infection occurs when the residue of evaporated droplets known as droplet nuclei or dust particles containing an infectious microorganism are disseminated into the air. Due to their small size and light weight they can remain suspended in the air for a long time. Often they can travel long distances. Microorganisms that are transmitted this way are then inhaled or deposited into an open wound. Most of the highly contagious childhood illnesses such as chickenpox, measles, and mumps are often transmitted through the airborne route and are inhaled by susceptible persons. Tuberculosis (TB) is the most common airborne disease in adults. Improperly filtered, undiluted air in surgical settings have been shown to be associated with the airborne transmission of nosocomial surgical wound infections. The protective barrier of the skin protects most persons from airborne microorganisms; however, if this barrier is broken through trauma or from surgery, organisms may be deposited in an open wound.

The fourth and final method of infectious disease transmission is known as **vehicle** transmission. This type of transmission requires a common vehicle to carry the infectious microorganism from its source to a susceptible host. Vehicles commonly involved in this type of disease transmission are food, water, intravenous fluids, drugs, and blood. Common examples of infection transmitted by foods are Hepatitis A and Staphyloccal infection. Contaminated intravenous fluid is another example of vehicle transmission. Hepatitis B, HIV, and other bloodborne pathogens such as Hepatitis C are frequently transmitted through the vehicle route.

When all of the variables described above are discussed together, they are often called the **"Chain of Infection."** Figure 1 illustrates the Chain of Infection. Each variable is linked to the other. If any component of the chain is missing, infection cannot occur. Strategies designed to prevent disease transmission must be targeted against one or more of the links in the chain. In caring for residents, the easiest way to break this chain is by targeting interventions at the means of transmission. Transmission is clearly the weakest link and the easiest variable to control.

Figure 1 - Chain of Infection

Breaking the Chain of Infection

Involves All Health Professionals

You

• Body Substance Precautions

For many years, taking "special" precautions with someone who was known to have an infectious disease has been the primary strategy utilized to protect health care personnel from exposure to diseases. In 1983, the Centers for Disease Control (CDC) published the "Guidelines for Isolation Precautions in Hospitals" describing two systems: Category-Specific Isolation and Disease-Specific Isolation. Both systems are diagnosis driven and are dependent on the resident's diagnosis to implement the appropriate special precautions necessary to interrupt the transmission of nosocomial infections. Category-Specific Isolation categories are derived by grouping diseases for which similar isolation precautions are indicated. For diseases to be grouped within isolation categories, more isolation precautions must be required with some diseases than just those that are necessary to prevent transmission of these diseases. Disease-Specific Isolation considers each infectious disease individually so that only those precautions that are indicated to interrupt transmission for that disease are recommended. These "special" precautions are an outgrowth of the concept of quarantine.

In actual practice, it is more reliable and makes far more sense to provide the same high level of infection precautions for all persons, rather than singling out only those with diagnosed infections and performing special practices only for them. A step toward this direction was made with Universal Precautions, a system developed by the Centers for Disease Control in 1987 to protect health care workers from bloodborne pathogens such as Hepatitis B virus and HIV. Under Universal Precautions, blood and certain body fluids of all residents are considered potentially infectious for human immunodeficiency virus (HIV), Hepatitis B virus (HBV), and other bloodborne pathogens. It is recommended that blood and body fluid precautions be consistently used for all residents. Since bloodborne pathogens are <u>not</u> transmitted by saliva, urine, feces, nasal secretion, sputum, vomitus, teardrops, or sweat, this system does not pertain to these body fluids unless they contain <u>visible</u> blood. This system does not address the risks of transmission of non-bloodborne pathogens to health care workers and to residents.

For these reasons a new system has been developed, **Body Substance Precautions** (BSP). It focuses on keeping all moist body substances (blood, feces, urine, wound drainage, tissues, oral secretions, and other body fluids) from the hands of personnel. This is accomplished primarily by increased glove use and handwashing. The system eliminates many of the ritualistic practices associated with traditional isolation systems while increasing the use of barriers for all contact with body substances.

The Body Substance Precautions system is consistent with recommendations from the Centers for Disease Control and Prevention (CDC), the American Hospital Association, and the Occupational Safety and Health Administration (OSHA) that point out the need to consider ALL blood and body fluids as potentially contagious regardless of a resident's diagnosis. In order to follow these recommendations, the

need to use barriers must be incorporated in the care provider's interactions with the resident. In the past, the resident's diagnosis had been the cornerstone of the traditional isolation systems.

The major reason for changing from a traditional "diagnosis-driven" isolation system to the "interaction-driven" Body Substance Precautions system is that clinically diagnosed infectious diseases represent only the tip of the iceberg. Many infectious organisms are carried without symptoms. This is certainly true for Human Immunodeficiency Virus (HIV) infection and for Hepatitis B Virus (HBV) infection. Therefore, focusing isolation precautions only on diagnosed cases of AIDS and Hepatitis B fails when the vast majority of persons who have the infectious agents in their blood are considered. Similarly, virulent or antibiotic-resistant strains of Gram-negative and Gram-positive bacteria, such as *Methicillin Resistant Staphylococcus aureus* (MRSA), may colonize moist body surfaces without symptoms. These organisms can easily be transmitted from person to person on the hands of personnel. Because medical history and examination cannot reliably identify all persons infected with these or other infectious diseases, it makes far more sense to treat **ALL** moist body substances as potentially infectious rather than to focus precautions only on the residents that are diagnosed with infectious diseases. The Body Substance Precautions system reduces the risks of such transmissions by the consistent use of barriers whenever any body substances are likely to be in contact with the caregiver's hands.

Body Substance Precautions provides a consistent approach to managing body substances from ALL residents and is essential in preventing transmission of potentially infectious agents.

The appropriate barrier to be used is selected after careful consideration of each specific situation for the overall risk associated with the task. Factors that should be included in the evaluation of risk include:

1. Type of body fluid with which there is or will be contact.
2. Volume of blood/body substances likely to be encountered.
3. Probability of exposure taking place.
4. Probable route of exposure.
5. Microbe concentration in fluid or tissue.

Many resident care procedures dictate the use of specific barriers for the resident's protection (i.e., sterile gloves for dressing changes). However, when personal protective equipment is selected for protection of the caregiver, use individual judgment in determining when barriers are needed. The caregiver must remember to follow the policies of the health care facility where employed. Each individual must establish his/her own standards for consistent use of barriers.

These personal standards should be based on the individual's skills and interactions with the resident's body substances, non-intact skin, and mucous membranes. The risk factors outlined above should be used to assist in the decision-making process.

Implementing the Body Substance Precautions system includes the following elements and should be followed by ALL personnel at all times regardless of the resident's diagnosis.

Handwashing - Wash hands often and well, paying particular attention to around and under fingernails and between the fingers. Wash hands whenever they are soiled with body substances and before performing invasive procedures. Always wash hands before donning and after removing gloves. Handwashing is the single most important practice in preventing the spread of infections.

Proper handwashing technique includes these steps:

1. Use a sink with warm running water, soap, and paper towels;

2. Push sleeves up above wrists; (some recommend removing jewelry and wristwatch);

3. Apply soap to the hands and wash the hands vigorously using plenty of lather and friction for 10 or more seconds; interlace fingers and rub palms and then back of hands in a circular motion; clean between fingers and vigorously clean the fingertips and nail beds;

4. Rinse hands and wrists thoroughly, keeping hands down and elbows up;

5. Dry hands thoroughly from the fingers down to the forearms and wrists with a paper towel; if available, use clean paper towel to turn off water.

Gloves - Wear gloves when it is likely that hands will be in contact with mucous membranes, non-intact skin, and/or any moist body substances, (blood, urine, feces, wound drainage, oral secretions, sputum, vomitus, or items/surfaces soiled with these substances). Gloves must be changed between residents. If a glove is torn or a needle stick or other injury occurs, the glove should be removed, discarded in the trash and a new glove used promptly as resident's safety permits.

Remember: Gloves are not a cure-all. They should reduce the likelihood of contaminating the hands, but gloves cannot prevent penetrating injuries due to needles or sharp objects. Dirty gloves are worse than dirty hands because microorganisms adhere to the surface of a glove easier than to the skin on your hands. Handling medical equipment and devices with contaminated gloves is not acceptable.

Always select the type of glove that is appropriate for the task being performed. The following general guidelines are recommended:

a. Use sterile gloves for procedures involving contact with normally sterile areas of the body.

b. Use examination gloves for procedures involving contact with mucous membranes, unless otherwise indicated, and for other resident care or diagnostic procedures that do not require the use of sterile gloves.

c. Change gloves between contacts (as defined above) with different residents or different body sites of the same resident.

d. Do not wash or disinfect surgical or examination gloves for reuse. Washing with surfactants may cause "wicking," i.e., the enhanced penetration of liquids through undetected holes in the glove. Disinfecting agents may cause deterioration.

e. Use general-purpose utility gloves (e.g., rubber household gloves) for housekeeping or plant engineering chores involving potential blood contact and for instrument cleaning and decontamination procedures. Utility gloves may be decontaminated and reused but should be discarded if they are peeling, cracked, or discolored; or if they have punctures, tears, or other evidence of deterioration.

f. If two pairs of gloves are worn, one on top of the other, both pairs are considered contaminated after use and <u>both</u> pairs must be changed.

g. Medium-sized gloves should be placed in each resident room. Other sizes are available in the treatment rooms and supply closets.

<u>Face & Eye Protection</u> - Wear masks and/or eye protection when it is likely that eyes and/or mucous membranes will be splashed with body substances, (e.g., when suctioning a resident with copious secretions, emptying fluids, and wound irrigation). These items should be available so they are accessible for personnel when needed.

<u>Apron or Gown</u> - Protect clothing with a plastic apron or gown when it is likely that clothing will be soiled with body substances. These items are primarily designed to reduce the soiling caused by moist body substances on the clothing of personnel. They should be worn any time soiling of clothes is anticipated. They should be removed and discarded after completion of each resident contact task.

<u>Sharps Handling</u> - Discard needle/syringe units and sharps, i.e. razor blades, in puncture-resistant containers labeled specifically for this purpose. Containers should be located in convenient, strategic locations on every floor. These containers will have a Biohazard symbol on them. They must be replaced routinely

and not be allowed to be overfilled. Generally, needles should not be recapped, bent, or broken by hand, but should be discarded directly into the needle disposal containers. In situations where recapping is necessary such as in the case of vacutainer needles, the "one-handed recapping technique" should be used as it is not possible to remove the vacutainer needle unit from the vacutainer sleeve without recapping it first. Needle-recapping devices should be used when recapping is necessary.

Laboratory Specimens - All specimens for the laboratory should be in leakproof containers. Individual specimens do not need to have the Biohazard label, if they are placed in a container which has the Biohazard label on it. If they are not placed inside of a labeled container, they must have the Biohazard label on them individually. If the outside of the container is contaminated, the specimen and container should be discarded and another sample obtained. When this is not possible, the specimen container should be placed in a plastic bag for transport.

Consistent with the need to treat all blood and body substances as if they are potentially infectious, **DO NOT** place "MRSA," "blood precautions," "AIDS," or other labels on specimens from residents with identified infections. Using special precautions labels on specimen tubes and containers encourages a false sense of security and potentially increases risk to personnel who may handle unlabeled specimens less carefully than they should. However, it is always important to note the resident's diagnosis on laboratory requests, x-ray requests, pathology requests, etc., because the diagnosis has clinical relevance.

Soiled Linen - All soiled linens are to be placed in laundry bags provided at the point of use. Avoid contact with clothes. Do not shake or place linen directly on the floor. No special precautions should be followed for persons known to be infected. Therefore, as above, linen should not be labeled. Soiled linens that are lightly to moderately moist should be folded and/or rolled in such a way as to contain moist area in the center of soiled linen.

Soiled linens that are saturated with moisture should be placed in a plastic bag and tightly secured. The plastic bag containing wet linens should then be placed in an approved laundry bag and closed before transporting to proper area. When a bag is **NOT** more than 2/3 full, it is closed and deposited in the soiled linen container. **DO NOT OVERFILL BAGS** as overfilled bags tend to rupture if they are dropped.

Disposal of Waste from Residents' Rooms - All trash generated from individual resident's rooms, with the exception of fluid-filled containers, can be disposed of in regular trash bags as per usual practice.

Fluid-filled containers - All fluid-filled containers (e.g. suction canisters, and hemovacs) may be emptied directly into a hopper or toilet. Personnel should wear protective attire (gloves, goggles) to protect themselves from splashes unless a protective mechanical barrier (splash shield) is provided.

If fluid-filled containers are disposed of without emptying, follow the infectious waste handling procedures of the facility.

Wound dressings - All wound dressings are to be disposed of in a manner so as to "confine and contain" any blood/body fluids that may be present:

- Small dressings can be enclosed in the disposable glove used to remove the dressing. Pull the glove off inside out containing the dressing inside of it. This dressing and the gloves can then be discarded into the regular trash container in the resident's room.

- Larger dressings should be removed using gloved hands and placed into an impervious bag. Small plastic bags are available as a "dressing change bag" that can be used at the bedside. This bag can be used for the old dressing, gloves, and other trash from the dressing change procedure. This bag can then be deposited into the regular trash container in the resident's room.

Cardiopulmonary Resuscitation (CPR) - To minimize the need for mouth-to-mouth resuscitation, resuscitation devices are located in designated areas within the facility. No transmission of Hepatitis B Virus (HBV) or Human Immunodeficiency Virus (HIV) via mouth-to-mouth resuscitation has been documented. However, because of the risk of salivary transmission of other infectious diseases (e.g., Herpes simplex and Neisseria meningitidis) and the theoretical risk of HIV and HBV transmission during artificial ventilation of residents, resuscitation devices should be used. Disposable resuscitation equipment and devices should be used once and disposed of or, if reusable, thoroughly cleaned and disinfected after each use.

Resident Placement, Activity Restriction, and the Use of Private Rooms for Infection Prevention and Control - The physician and persons responsible for infection control should assess individual residents as to the potential for transmitting infectious organisms. Room assignments and restriction of activities are determined by this assessment. Although there are many reasons for using private rooms, the major reasons are diseases transmitted in whole or in part by the airborne route or the resident extensively soils the environment with body substances.

Resident Placement in the Absence of Culture and Sensitivity Reports - In the absence of culture and sensitivity information, private rooms are generally indicated for residents with uncontrollable excretions (diarrhea), secretions, heavy wound drainage and widespread skin disease. Residents should be confined to their rooms while the above conditions exist. If no private rooms are available, the resident could be placed in a semi-private room with a resident considered at low risk for developing an infection, such as one who is:

- ambulatory
- well-nourished and hydrated
- able to take care of daily needs
- not needing invasive lines or tubes
- not immunocompromised by disease or drugs

Alternatively, residents considered at higher risk for colonization with a specific pathogen (including multiply-resistant organisms) and subsequently developing infection are those who:

- have had multiple courses of antibiotics or prolonged antibiotic therapy
- are on dialysis (hemo or peritoneal) or have renal failure
- are immunocompromised, on long-term steroids or chemotherapy
- have an open wound, surgical or non-surgical,; i.e., pressure ulcers
- have an invasive site; i.e., I.V., gastrostomy, foley, tracheostomy

Resident Placement with Knowledge of Culture and Sensitivity Reports - If a multiply resistant organism has been identified by culture as colonizing or infecting a resident, he/she could share a room with another resident having the same organism, preferably with the same antibiogram. If a resident is not available with the same organism, the roommate should be a resident who is considered at low risk for colonization and subsequent infection with that organism, as mentioned above.

Activities - Coherent residents, colonized or infected with a specific pathogen, may participate in nursing home activities and may eat in the dining hall. Since there are both recognized and unrecognized pathogen carriers participating in nursing home activities, all residents should be considered colonized and should have wounds or invasive sites cleansed and covered, and have hands washed before leaving their rooms. As above, each resident should be assessed individually prior to restricting activities.

• Example Situations Using the Body Substance Precautions System

Because the BSP system is judgment and skill-based, each individual makes his/her own decisions about when to wear gloves and use other barriers based on their own skill and their interaction with the resident's body substances, non-intact skin or mucous membranes. Here are some examples of typical situations:

Caring for incontinent residents - It is difficult to clean an incontinent resident without getting urine and/or stool on the hands. Gloves should be worn routinely for cleaning incontinent residents and for helping residents with toileting activities. The major risk in such situations is getting stool underneath the fingernails. Gloves reduce this risk and make handwashing after completing the tasks easier and more efficient. A plastic apron is also usually needed for cleaning up incontinent residents and changing the bed. Obtain the plastic apron **BEFORE** the tasks are begun.

Emptying Urinary Catheter Bags - When a care provider is emptying a urinary catheter bag, this should be viewed as a single interaction to a single resident and the tasks for one resident should be completed before going to the next resident. Gloves should be worn to empty catheter bags as it is difficult not to get urine on the hands. Gloves must be changed and hands washed between residents. It is unacceptable to consider it a single task to empty the catheter bags for several residents in sequence without changing gloves and washing hands between residents. This is because of the real risk of transmitting organisms from the catheter bag drainage spout of one resident to the next resident's drainage spout on the hands of personnel.

When a resident has a rash or skin lesions - When a resident has a rash on their body or skin lesions, it could be due to any number of causes. A critical index of suspicion is essential to determining whether the rash is varicella (chickenpox or zoster), herpes simplex, scabies, syphilis, impetigo, a drug reaction, or due to any number of other causes. The most important intervention for rashes or skin lesions is to call it to the attention of the resident's physician and determine its cause promptly. In many cases, prompt recognition of the rash, identification of the cause, and prompt appropriate intervention can prevent transmission to the care provider and others.

Suctioning residents - Most persons have learned to suction residents without getting splashed in the face themselves. With the Body Substance Precautions system, each individual needs to evaluate his/her suctioning practices and only use eye protection and masks if splashing is likely to occur. Most persons who suction residents frequently have learned how to position their head so that they are not splashed. Suctioning of a resident's airway should **ALWAYS** be done with the care provider wearing gloves on both hands. The suction kits contain two gloves to make it convenient. In addition, if a care provider puts hands into a resident's mouth for **ANY** reason, (e.g., for examination or when doing mouth care), gloves should be worn for the interaction.

Starting intravenous therapy infusions - A person starting intravenous therapy must wear gloves. The major risk in starting IVs and drawing blood is for needle stick injuries. Careful needle handling is the most important factor in this interaction. Generally, needles should not be recapped, bent, or broken by hand, but should be discarded directly into the needle disposal containers. In situations where recapping is necessary such as in the case of vacutainer needles, the "one-

handed recapping technique" should be used as it is not possible to remove the vacutainer needle unit from the vacutainer sleeve without recapping it first. Needle-recapping devices should be used when recapping is necessary.

Manipulating stopcocks - A person who manipulates stopcocks on a regular basis often gets blood on their hands during such manipulations. If getting blood on the hands is the usual experience for the individual, gloves should be worn for manipulating stopcocks. It is wise to develop a standard practice of wearing gloves to manipulate stopcocks and lines because it is difficult to do so without getting blood on the hands.

Phlebotomy and fingersticks - Gloves should always be available for phlebotomists. Wear gloves for performing any intravascular procedure and finger/heel sticks. Gloves are not necessary for intramuscular injections or allergy testing unless hand soiling is likely.

•Precautions for Residents with Airborne Diseases

1. PRIVATE ROOM
2. "STOP SIGN ALERT" ON DOOR (See Appendix I.)
3. DOOR CLOSED

When a resident is suspected of or known to have a disease transmitted in whole or in part by the airborne route, the physician needs to request a private room and write the diagnosis or "rule out" diagnosis on the order sheet. This will prompt the nurse to place a **"stop sign alert"** on the door to the resident's room. **The stop sign alert instructs anyone about to enter the room to "check with nurse before entering."**

The nurse is responsible for:

1. Determining whether a mask is indicated for the person who wishes to enter the room. For example: for a resident with active tuberculosis or any of the other airborne diseases on pages 60 and 61 which are marked with an asterisk (*). All persons entering these rooms will be instructed to wear a mask.

2. Some diseases confer lifelong immunity such as measles and chickenpox, (diseases marked with a double asterisk [**] on pages 60 and 61. For these cases, the nurse is responsible for determining the immune status of the person who wishes to enter the room. For example: if the resident has chickenpox, the nurse should ask the individual who wishes to enter if he/she has had chickenpox. If the answer is yes they are immune and may enter without a mask and provide care using routine Body Substance Precautions. If they have never had the disease they are susceptible and they should not

enter the room with or without a mask, because masks do not guarantee protection against these viral infections.

The following diseases are transmitted in whole or in part by the airborne route. Residents with these diseases need to be assigned to private rooms equipped with special ventilation, (negative air pressure), and have a "STOP SIGN ALERT" posted on the door. **The door should remain closed at all times.** In rooms where special ventilation is not available, fans can be placed in the window facing out to create negative pressure.

Chickenpox & Tuberculosis are Category II diseases which must be reported to the Dept. of Health within 7 days. The facility shall also report to the Division of Aging if a resident is diagnosed as having a communicable disease. 13 CSR 15-14.042 (83) I/II + 13 CSR 15-15.042(31) I/II.

Diseases	Apply airborne precautions how long?	Comments
** Chickenpox (Varicella/Zoster)	Until all lesions are crusted.	Persons who are not susceptible do not need to wear a mask. Exposed susceptible residents should be isolated beginning 10th day after first exposure until 21 days after last exposure.
** Disseminated Zoster "shingles" or localized in immunocompromised resident.	Duration of illness.	Localized lesions in immunocompromised residents frequently become disseminated. Because such dissemination is unpredictable, use the same precautions as for disseminated disease.
* Tuberculosis, Pulmonary, confirmed or suspected.	In most instances, duration can be guided by clinical response and a reduction in numbers of TB organisms on sputum smear. Usually this occurs within 2-3 weeks after chemotherapy is begun. When the resident is likely to be infected with INH-resistant organisms, apply precautions until resident is improving and sputum smear is negative for TB organisms.	Prompt use of effective anti-tuberculosis drugs is the most effective means of limiting transmission.
*Anthrax, Inhalation	Duration of illness	Promptly report to Dept. of Health.

Diseases	Apply airborne precautions how long?	Comments
*Diphtheria, Pharyngeal	Until 2 cultures from both nose and throat taken at least 24 hours after cessation of antimicrobial therapy are negative for Corynebacterium diphtheriae.	
**Measles (rubeola)	For 4 days after start of rash, except in immunocompromised residents, with whom precautions should be maintained for duration of illness.	Persons who are not susceptible do not need to wear a mask.
**Mumps (infectious parotitis)	For 9 days after onset of swelling.	Persons who are not susceptible do not need to wear a mask.
*Pertussis (whooping cough)	For 5 days after state of effective therapy.	
*Plague, Pneumonic	For 3 days after start of effective therapy.	Promptly report to the Dept. of Health.
*Viral hemorrhagic fevers. (Lassa, Marburg, Ebola, Crimean-Congo)	Duration of illness.	Call the Dept. of Health and CDC for advice about management of a suspected case.

* Wear a mask
** All persons who are **not immune** to these diseases **should not** enter the rooms of these residents.

• Health Care Worker's Responsibilities in Developing Safe Work Habits

1. Each health care worker needs to evaluate his/her own interactions with the resident and use barriers as appropriate, based on anticipated contact with body substances and not the resident's diagnosis of infection. Use the guidelines described on pages 53-59 to make these judgments.

2. If the resident has a disease which is transmitted in whole or in part by the airborne route, the nurse is responsible for triage of persons wishing to enter the resident's room. Use the guidelines on pages 59-61 to make these judgments.

3. All direct care providers need to know their own chickenpox, measles, and Rubella immune status; participate in an annual TB skin testing program; and be vaccinated against the current influenza viruses.

4. All direct care providers who have frequent contact with blood or body fluids should be vaccinated against Hepatitis B.

5. Health care workers with skin problems such as exudative lesions or weeping dermatitis **must** refrain from all direct resident care and from handling resident-care equipment until cleared by the facility administrator or his/her designee. These conditions put the employee and the resident at risk of infection.

6. "Personnel who have been diagnosed with a communicable disease may begin work or return to duty only with a physician's written approval and indication of any limitation." 13CSR 15-14.042 (26)II + 13 CSR 15-15.042 (13) II.

• Occupational Exposures and Infections

Students exposed to the blood or body fluids of other persons via "sharps," mucous membranes, or open wounds; or those exposed to airborne disease to which they are not immune (i.e., tuberculosis, chickenpox, measles, mumps, rubella, etc.) must be seen by a designated infection control person. Immediate reporting is needed so appropriate treatment can be administered and documentation for Worker's Compensation purposes and follow-up can be guaranteed. Although students are not eligible for Workers' Compensation, they need to know about it for future employment. Physicians, house officers, and nurses who are aware of such exposures or work-related injuries, should not administer treatment on the ward. Also, tests should not be ordered for diseases such as Hepatitis B or human immunodeficiency virus on residents to whom students or other staff members are exposed.

When this policy is not followed, information is often incomplete or lost, and appropriate treatment is not given and Worker's Compensation information is not gathered. The infection control personnel will evaluate the source resident and request the resident's permission for appropriate testing. It is very important to note that much of the information involved in this process must remain confidential, and everything possible should be done to protect the privacy of the individuals involved. In addition, the exposed person will be provided both pre- and post-test counseling as required by state law.

Procedure for Occupational Exposure to Blood or Other Potentially Infectious Materials

Purpose: To effectively evaluate, prophylax/treat, and follow-up all occupational exposures to blood and body fluids via needlesticks, other sharps injury, mucous membrane, or cutaneous contact.

Students performing direct resident care are at risk of coming into contact with blood or potentially infectious materials. Even with good adherence to all exposure prevention practices, exposure incidents can occur. Occupational exposure is defined as any skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials.

Personnel (physicians, staff, students*) who have exposure to blood or body fluids of another person (resident or staff) via "sharps" injury, mucous membrane, or percutaneous route must follow these steps:

*1. **Thoroughly wash wound or exposed area with soap and water. If splashed in the eyes, flush with copious amounts of water or saline.**

Comment: This process will help to physically remove contaminants and thus reduce the bioburden.

*2. **Identify source resident when possible (write down name, unit number, location).**

Comment: This will assist the Staff Health personnel to perform an accurate risk assessment and to obtain consent for HIV/HBV testing of the source resident.

*3. **Report to clinical instructor, preceptors, or supervisor as soon as possible after injury/exposure.**

4. **Notify staff supervisor. Staff supervisor will direct you in following facility policy for exposure.**

Comment: The supervisor can investigate the incident in a timely manner and evaluate immediate steps to prevent further incidents, where possible.

5. **Exposure to a source resident KNOWN (not suspected) to be infected with HIV or HBV.**

If needle puncture/mucous membrane exposure is to a resident that is known (not suspected) to be HIV antibody or Hepatitis B surface antigen positive, the exposed staff member should be seen immediately by approved medical personnel.

Comment: For exposure to residents known to be infected with HIV, the student should be counseled regarding the risks and benefits of AZT prophylaxis prior to giving it. Although the value of AZT in preventing HIV infection is unknown at this time, in animal studies its effectiveness depends upon early administration (within one to two hours of exposure).

For exposure to residents known to be infected with Hepatitis B, it is important to evaluate the Hepatitis B immune status of those who have been vaccinated. In staff who have not been vaccinated or who do not have Hepatitis B surface antibody titers sufficient for protection, Hepatitis B immune globulin and vaccine should be administered as soon as possible after exposure.

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21. Lynch P, Jackson MM, Cummings MJ et al. *Rethinking the role of isolation practices in the prevention of nosocomial infections.* Ann Int Med 1987; 107:243-246.
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23. Lynch P and Jackson MM. *Isolation practices: how much is too much or not enough?.* ASEPSIS The Infection Control Forum. 1986, 8(4):2-5.

Appendix J

Body Substance Precautions Stop Sign Alert
Sample Body Substance Precautions Sign

Body Substance Precautions
Stop Sign Alert

SEE THE NURSE BEFORE ENTERING

Sample Body Substance Precautions Sign

BODY SUBSTANCE PRECAUTIONS ARE FOR ALL PATIENT CARE

BODY SUBSTANCES INCLUDE BLOOD, FECES, URINE, WOUND DRAINAGE, TISSUES, ORAL SECRETIONS, AND OTHER BODY FLUIDS.

Wash hands.

Wear gloves when likely to touch mucous membranes, non-intact skin, and/or any moist body substances.

Wear plastic apron when clothing is likely to be soiled with body substances.

Wear mask and/or eye protection when likely to be splashed.

Discard needle/syringe units and sharps in puncture resistant containers. DO NOT recap needles by hand.

BEST COPY AVAILABLE

Appendix K

Infection Control Achievement Test
Answer Key

Student Name: _____ Date: _____

Infection Control Achievement Test

Circle the letter that corresponds to the best answer.

1. Body Substance Precautions emphasize avoiding contact with:

   a. Blood only.
   b. Blood and urine.
   c. Blood, urine, feces, and semen.
   d. Any body fluid.

2. You are emptying a foley catheter bag. According to Body Substance Precautions, you should:

   a. Wash your hands after completion of the procedure.
   b. Wear exam gloves and wash your hands.
   c. Wear exam gloves and goggles.
   d. Not be concerned, urine is not a potentially infectious material.

3. You are going to start an IV. The resident is in for an elective procedure and is in good health. You work when needed, about four days every two weeks, and start IVs occasionally. Appropriate protective equipment would be:

   a. Exam gloves.
   b. Nothing, but wash your hands thoroughly if you get blood on them.
   c. Exam gloves and goggles.
   d. A mask and gown.

4. You are a "bath nurse" today at your Long-Term Care Facility. When doing perineal care, you should:

   a. Wear exam gloves, remove them at break-time, wash your hands and begin with clean gloves after break.
   b. Wear exam gloves for each resident and remove gloves when completed.
   c. Wear exam gloves for the body and double glove for perineal care.
   d. Not need to take any special precautions.

5. The <u>most</u> effective practice to prevent the spread of microorganisms is:

   a. Wearing sterile gloves for procedures.
   b. Wearing nonsterile exam gloves for procedures.
   c. Donning a gown and mask when working with infected residents.
   d. Thorough handwashing.

6. Of the following situations, which provides the most suitable environment for the growth of microorganisms?

   a. A warm, dark, moist environment under a pendulous abdomen
   b. A room that is sunny with effective ventilation at 70°F
   c. A surgical wound that is open to air and light
   d. An overbed table that has been damp dusted and left open to dry

7. An effective way to break the chain of infection is to:

   a. Spray the air with disinfectant to eliminate droplet nuclei.
   b. Cover your mouth with your hand when you cough.
   c. Avoid touching residents except when necessary.
   d. Cover all wounds so microorganisms cannot get in.

8. Which of the following will be most effective in preventing the growth of microorganisms in the environment?

   a. Changing bed linens for a bedfast resident every 2 weeks
   b. Changing the gown and sheets daily of a resident who is sweating a lot
   c. Cleaning the resident's bedside table routinely and discarding trash
   d. Fogging resident's room daily

9. You are a dental hygienist preparing to clean a resident's teeth. Since splashing may occur during cleaning, you should:

   a. Take no special precautions, saliva isn't potentially infectious.
   b. Wear sterile gloves and a mask.
   c. Wear exam gloves, mask and goggles (face shield), and gown.
   d. Wear a mask and goggles.

10. You are a respiratory therapist who is proficient at suctioning residents - splashing rarely occurs. What personal protective equipment should you select?

    a. An exam glove on each hand
    b. A sterile glove on each hand
    c. A single sterile glove on the hand inserting the suction tube
    d. Sterile gloves on each hand, mask, and goggles

11. A health care worker who utilizes Body Substance Precautions would need to take additional precautions against diseases transmitted by the _____ route.

    a. Direct
    b. Indirect
    c. Vehicle
    d. Airborne

12. Before placing needles in a sharps container, health care providers should:

    a. Recap all needles.
    b. Recap needles using both hands.
    c. Never recap needles using one-hand method.
    d. Never recap needles by hand.

13. The Body Substance Precautions System provides a consistent approach to managing body substances from _____.

    a. All residents regardless of diagnosis
    b. All residents diagnosed with infectious diseases
    c. Residents diagnosed with any airborne disease
    d. Residents placed in isolation

14. How does a health care worker determine what personal protective equipment is needed for a particular medical procedure?

    a. All workers would use the same type of equipment regardless of skill or type of procedure to be performed.
    b. All workers would use the same type of equipment regardless of resident's diagnosis.
    c. Each worker would determine what equipment is needed based on his/her skill and the type of procedure to be performed.
    d. Each worker would determine what equipment is needed based on his/her skill and the resident's diagnosis.

Match the mode of transmission on the right with the example on the left.

15. _____ Touch a contaminated instrument	A. Vehicle
16. _____ Changing soiled bed linens	B. Droplet contact
17. _____ Touching a resident	C. Direct contact
18. _____ Sneezing	D. Indirect contact
19. _____ Contaminated food	E. Airborne transmission
20. _____ Dust particle in the air	

Complete the following short answer questions.

21. List the 5 factors that should be considered when determining the risk of contamination associated with a particular task.

22. What is an occupational exposure incident?

23. As a student in the clinical area, what steps should you follow when you experience an exposure?

Answers to
Infection Control Achievement Test

1. d
2. b
3. a
4. b
5. d
6. a
7. b
8. c
9. c
10. b
11. d
12. d
13. a
14. c
15. d
16. d
17. c
18. b
19. a
20. e

21. 1. Type of body fluid with which there is or will be contact.

    2. Volume of blood/body substances likely to be encountered.

    3. Probability of exposure taking place.

    4. Probable route of exposure.

    5. Microbe concentration in fluid or tissue.

22. Occupational exposure incident is defined as any skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials.

23. 1. Thoroughly wash wound or exposed area with soap and water. If splashed in the eyes, flush with copious amounts of water or saline.

    2. Identify source resident when possible (write down name, unit number, location).

    3. Report to clinical instructor, preceptors, or supervisor as soon as possible after injury/exposure.

Appendix L

Sample Checklist for Maintenance of HOE Student Records and Forms

Checklist for
Maintenance of HOE Student Records and Forms

Class of _____

List all students and check (✓) or N/A as applicable:

Student Name	Information Meeting, Student & Parent	Test Mastery of Instructional Objectives	Immunization Record	Comments:
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
(continues on back of form)				

Student Name	Information Meeting, Student & Parent	Test Mastery of Instructional Objectives	Immunization Record	Comments:
19.				
20.				
21.				
22.				
23.				
24.				
25.				
26.				
27.				
28.				
29.				
30.				
31.				
32.				
33.				
34.				
35.				
36.				
37.				
38.				

Completed By:

Name _____ Title _____ Date _____

Appendix L

Resources

Resources

1. Written (Obtain most current edition.)

   a. Benenson, Abram S. ed. *Control of Communicable Diseases in Man*, 15ed. Washington DC: American Public Health Association, 1990. (1015 Fifteenth Street NW, Washington DC 2005)

   b. Committee on Infectious Diseases American Academy of Pediatrics. *Report of the Committee on Infectious Diseases "The Red Book," 22 ed.* Elk Grove Village, IL: American Academy of Pediatrics, 1991. (141 Northwest Point Blvd, P.O. Box 927, Elk Grove Village, IL 60009-0927)

   c. Occupational Safety and Health Administration. *Occupational Exposure to Bloodborne Pathogens; Final Rule*. Department of Labor, Dec. 6, 1991.

2. Agencies/Associations

   a. U.S. Department of Health and Human Services, Public Health Service, Centers For Disease Control and Prevention (CDC), Atlanta, Georgia 30333. The main switchboard number is 404-639-3311. To oder publications call 301-436-8500.

   b. Division of Environmental Health and Epidemiology, Missouri Department of Health, 1730 East Elm, Jefferson City, MO 65102-0570.

      1) Bureau of Communicable Disease Control. 314-751-6115
      2) Bureau of Immunization. 314-751-6133
      3) Bureau of STD/HIV Prevention. 314-751-6141
      4) Bureau of Tuberculosis Control. 314-751-6122

   c. Health Occupation Education Supervisor, Missouri Department of Elementary and Secondary Education, P.O. Box 480, Jefferson City, MO 65102-0480. 314-751-7764

   d. Instructional Materials Laboratory (IML), 8 London Hall, University of Missouri-Columbia, Columbia, MO 65211. 800-669-2465 (develops and disseminates health occupations education materials)

   e. Missouri Vocational Resource Center (MVRC), 8 London Hall, University of Missouri-Columbia, Columbia, MO 65211. 800-392-7217 (provides free-loan health occupations materials to Missouri instructors)

f. Occupational Safety and Health Administration (OSHA). St. Louis office, 800-392-7743. Kansas City office, 800-892-2674.

g. Special Federal Instructional Programs, Missouri Department of Elementary and Secondary Education, 1730 East Elm Street, P.O. Box 570, Jefferson City, MO 65102-6115. 314-751-3805 (AIDS information)